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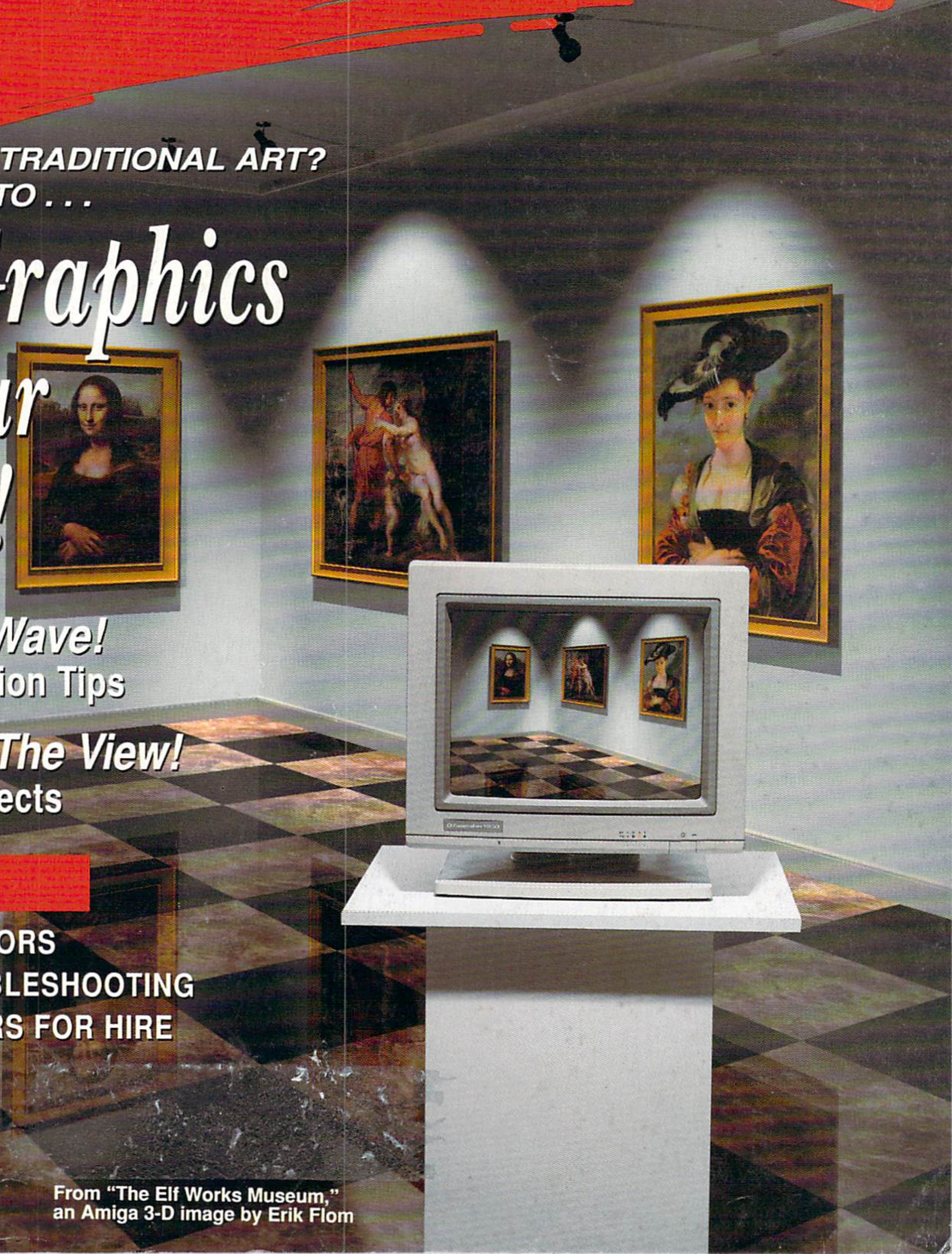
Video News Flash! THE TOASTER 4000 – p.4 & 8

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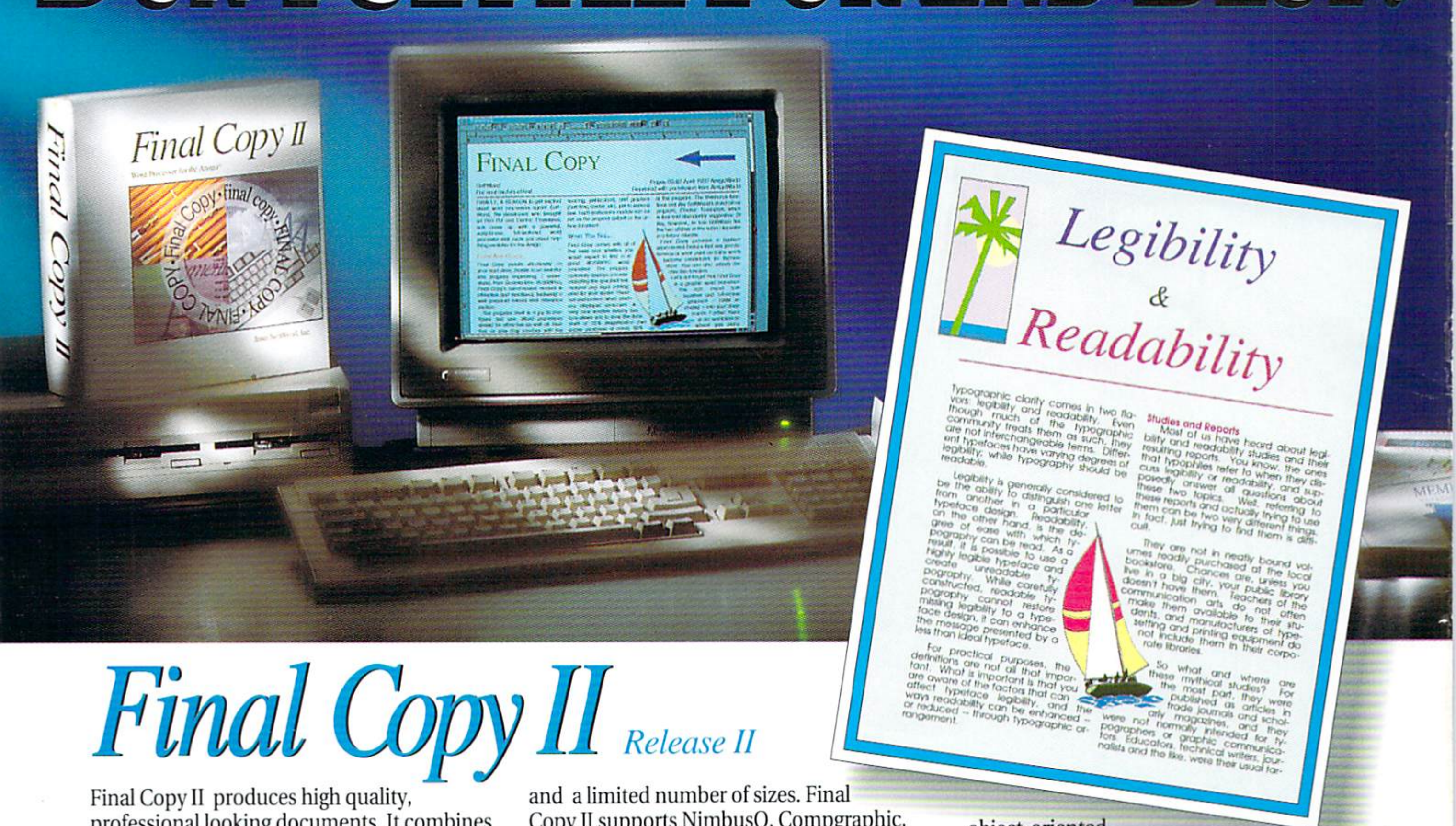
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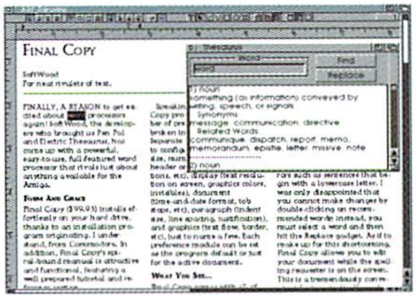
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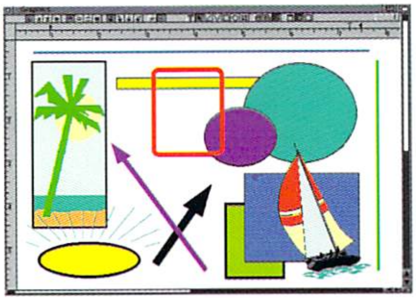
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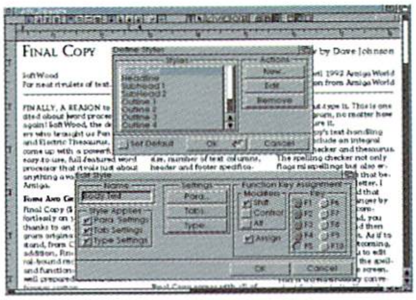
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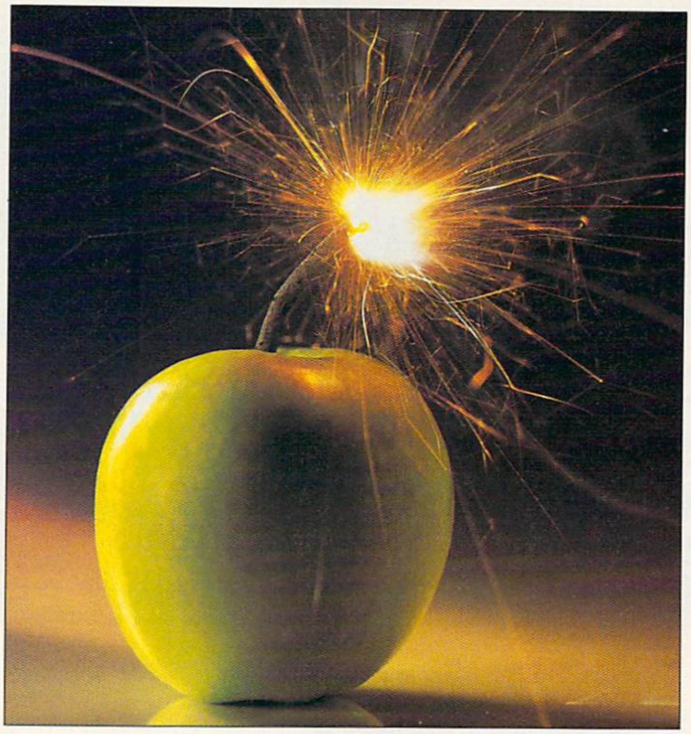
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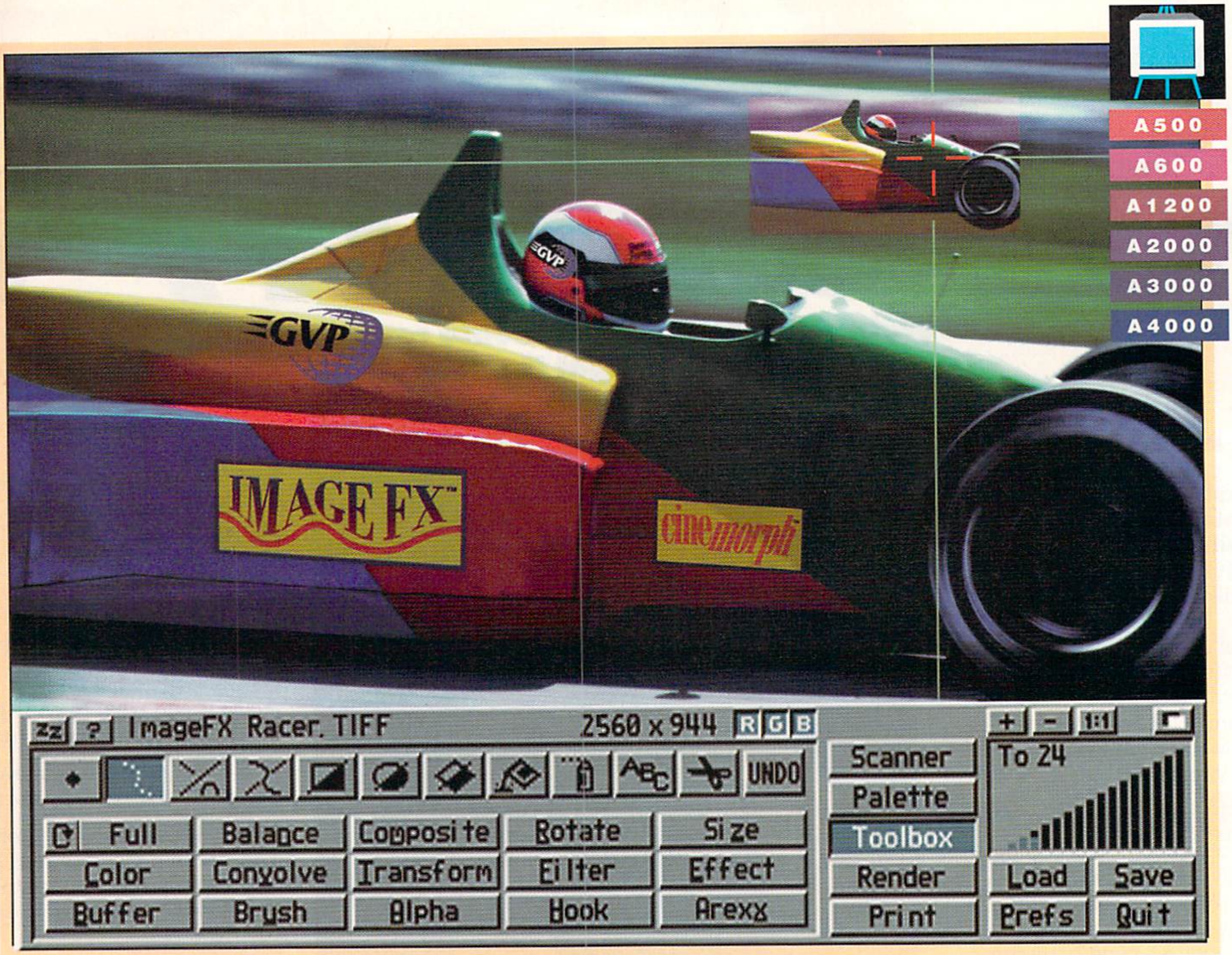
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CONTENTS

VOLUME 9, NUMBER 7, JULY 1993

FEATURES

Fluid Form
By Lennard Price 24
Three-dimensional liquid effects—waves, ripples, molten metals, even gases—are some of the hottest commercial animation effects. Learn how you can create them like the pros with Amiga 3-D graphics packages.

Digital Canvas 28
In keeping with our 3-D graphics focus this month—and in appreciation of the many works so kindly submitted by artists—we bring back our "gallery" from the early days of *AW*.

1+1=3(D)!
By Joel Hagen 30
Creating "stereo pairs" is the 3-D key in this tutorial. Learn how to produce images and animations you can view in stereo 3-D.

ARTICLES

The PC Connection
By Dave Johnson 35
If you need IBM PC emulation on your Amiga, here's a comparative evaluation of eight leading PC bridgeboards/emulators to help put you squarely at the A: prompt.

Put on the Hex
By Jim Maciorowski 43
Computer viruses can attack your system at any time. Learn these practical preventive measures and find out about a new European crop of potent virus-killing programs.

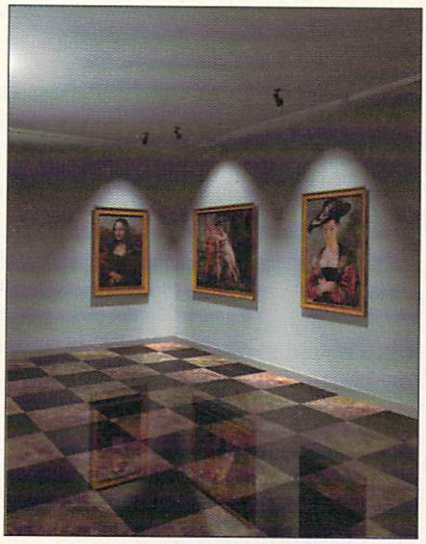
COLUMNS

Editor's Drawer *By Dennis Brisson* .. 4
A recent deal between Commodore and NewTek puts the latter's flagship product squarely back in the former's camp.

Accent on Graphics
By Joel Hagen 48
If you liked Joel's feature this month on 3-D stereo graphics (p. 30), here are some inexpensive follow-up tips on outputting such images for use with optical viewers.

Video Suite
By Joel Tessler and Michael Hanish 50
In this first installment of a two-parter on troubleshooting your video productions, our video team shows you where to look when you can't *see* the cause of your signal problems.

COVER IMAGE BY ERIK FLOM
COVER PHOTOGRAPH BY EDWARD JUDICE



You may have seen some scenes from Erik Flom's incredible imaginary fine-arts museum before, but not this one: Flom created it just for our cover. He modeled all the objects from scratch on an A3000 using NewTek's LightWave 3D 2.0; the paintings came from CompuServe's fine-arts library. Flom, who runs a 3-D production service (ELF Works in Alameda, CA), began the museum as an experiment in photorealism. We think he succeeded!

Player's Choice Contest 85
Pick your all-time favorite Amiga games—and win an Amiga 1200 in the bargain—in *AW*'s first-ever Player's Choice Contest.

DEPARTMENTS

Overscan 8
You'll find plenty of Amiga news and new products that deserve "scanning" this month.

Help Key 92
Help yourself to some free advice as Tim answers technical questions from our readers.

List of Advertisers 94

The Last Word 104
For 29 cents you can step up to the box and take your swings.

REVIEWS

V-Lab v3.1 *(MacroSystems)* 16
Powerful 24-bit video-digitizer combo.

VistaPro 3.0
(Virtual Reality Laboratories) 20
AGA upgrade of the landscape-generation program.

DSS8+ Digital Sound Studio
(GVP) 64
Accent the "plus" in this sampling/editing package update.

Professional Page 4.0 *(Gold Disk)* .. 64
Pro Page DTP for AGA Amigas.

Retina *(MacroSystems)* 68
New low-cost 24-bit display card.

MBX 1200z *(MicroBotics)* 70
A1200 RAM expansion/FPU card combo.

SQ5110C Removable Cartridge Disk Drive *(Syquest)* 72
Convenient mass storage in 44/88MB versions.

Pro-Board 3.0 *(Prolific)* 72
Do-it-yourself printed-circuit-board maker.

GAMES

Crib Notes *By Peter Olafson* 76
Once more to the brink with Shadow of the Beast III in this month's gaming tips column.

Bard's Tale Construction Kit
(Interplay) 76
Roll your own versions of the classic Amiga RPG favorite.

Legends of Valour *(U.S. Gold)* 78
Smooth-flowing, free-scrolling RPG mport.

Short Takes 82
Capsule reviews of new Amiga games.

***AW* Product Information** 102
To contact the developer of any product mentioned in this issue of *AmigaWorld*, consult our all-in-one "Manufacturers'/Distributors' Addresses" list.

EDITOR'S DRAWER

Commodore and NewTek join forces to bring you the Video Toaster 4000.

A Marriage Made in Video Heaven?

The big news coming out of the National Association of Broadcasters (NAB) show last month did not take many Amiga users by surprise. After all, for the past few months, rumors of a 4000-compatible Video Toaster have been as widespread as mushrooms in May. *How* the announcement was presented generated the excitement. It was promoted as "a joint marketing effort" between NewTek and Commodore. The display of cordiality and good fellowship between these two video titans was unprecedented. James Dionne, Commodore President and General Manager, commented, "Commodore is pleased to join NewTek as they announce the Video Toaster 4000..." NewTek's president, Tim Jennison, reciprocated with similar words praising "this powerful combination of new technologies..."

The announcement ushers in a new era of cooperation between Commodore and NewTek and threatens to bring a smile to even the most crusty, hardened Amiga veteran. It also signals the beginning of a burgeoning support market for the Toaster 4000, which, if the NAB show is any indication, promises to eclipse that shown for its predecessor. (*See p. 8 for more on the Video Toaster 4000 and a roundup of support products.*)

The 4000 version of the Video Toaster is newly designed to fit exactly into the dedicated 4000 video slot—no modifications necessary!—and to take advantage of the new AGA chip set. In naming its new product, NewTek alludes to the source of the power behind the new Toaster magic, that is, the A4000. If you check out the ads for the new Toaster, you'll be pleased to identify right away the Commodore equipment that the Toaster uses: No more hiding the fact that the Toaster runs on an Amiga. Since the Toaster is so inextricably tied into the Amiga's custom chips, it never made much sense, anyway, to try to hide the Amiga's role.

This new computing *glasnost* promises more visibility and an elevated status for Commodore's machines, and promises to deliver video power to the legion of Amiga users.

Video Toaster 4000 features a new, improved version of NewTek's LightWave software, with increased speed and ease of use. (Lightwave is already used extensively in Hollywood.) Other features include a new, easier-to-use interface and hundreds of eye-popping effects—from the simple to the complex. In addition, a new mouse-controlled character generator greatly expands your titling options.

Extra features, power, convenience, and, best of all, a low price. If you're a dedicated Toaster user, then you need no further convincing that Toaster 4000 is for you. If you're still wondering what the "revolution" is all about, now may be a good time for you to take a serious look at this new Toaster, which is due next month in computer stores. *AmigaWorld* will follow this announcement with a hands-on review of NewTek's new hardware/software combo for the A4000. Stay tuned.

Dennis Brisson

Dennis Brisson
Editor-in-Chief

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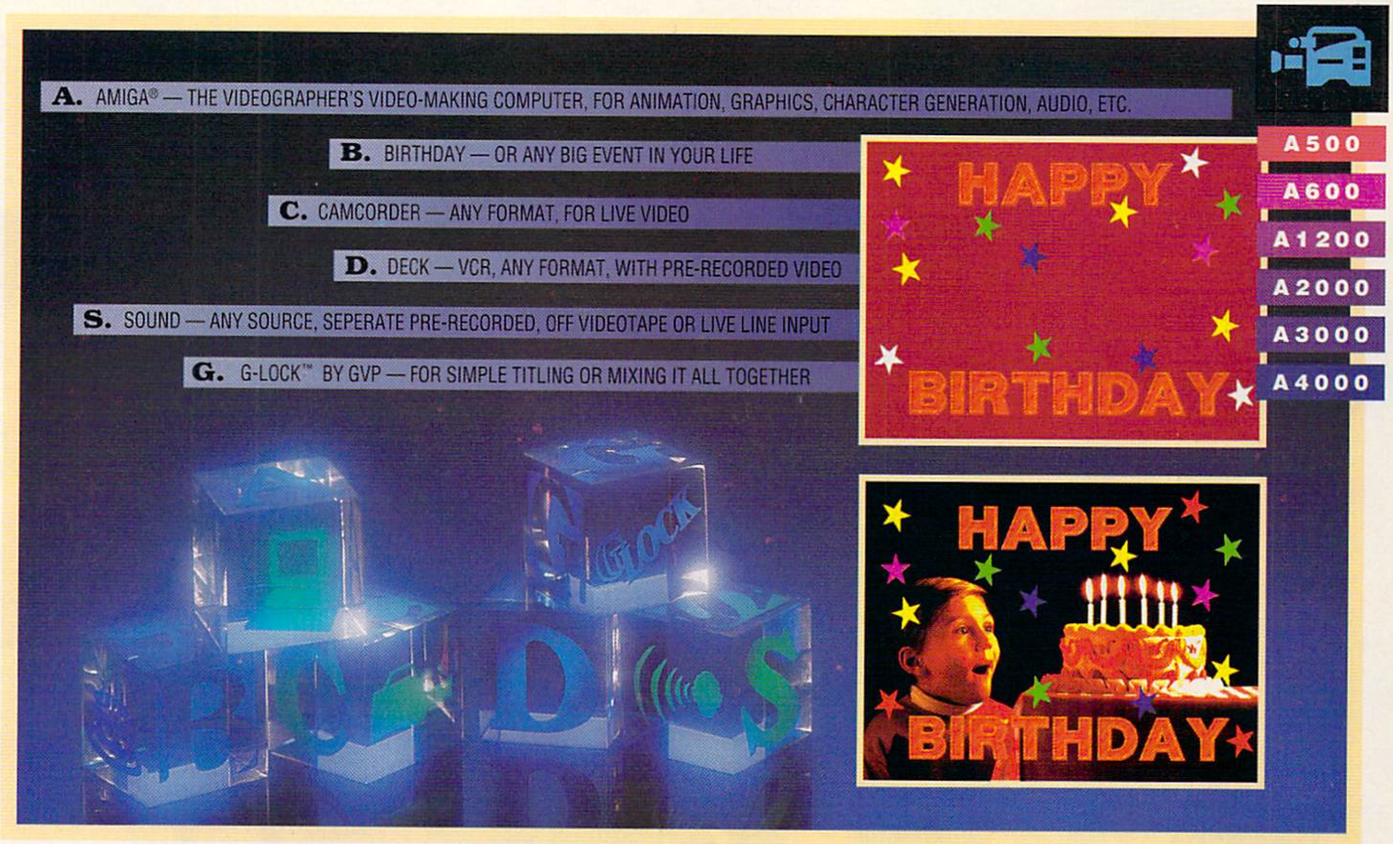
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News, New Products and Networks

NAB '93 Toasts New Toaster 4000

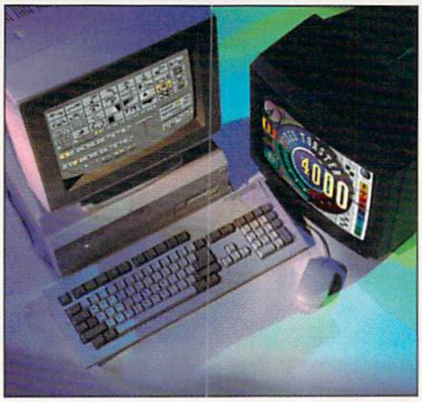
LAS VEGAS, NV—High-profile Amiga action astounded many of the more than 70,000 attendees at the 1993 National Association of Broadcasters (NAB) conference in late April. Set against the ersatz glitter of Las Vegas at the sprawling Las Vegas Hilton, the show featured the video-oriented products of hundreds of hardware and software manufacturers.

Commodore arrived boothless, but at a pre-show NewTek/Commodore press conference, CBM President James Dionne announced an olive-branch liaison between the two companies and the mid-May release of the closely-guarded AGA-compatible **Toaster 4000**. (RS# 138).

Lights... Camera... Amiga!

NewTek's dynamic circular booth in the crowded main video hall allowed company personalities to perform three nonconflicting demos simultaneously. Effectively capturing all but the most jaundiced eyes of the desensitized crowds, huge video monitors flashed 3-D-embellished videos, transitions, and wipes (some included sound effects), while high-decibel lectures bellowed the virtues of the Toaster 4000. Overall, NewTek's display held its own, even when compared to the far costlier high-end video effects and HDTV productions throughout the exhibition.

The Toaster 4000 sported a new look for spring, thanks in no small part to a PostScript-font-compatible 24-bit Toaster character generator (CG). Expectations were kept in check, though, as the occasional system crash and glossy press kits *sans* detailed spec sheets reminded everyone of the miles to go before NewTek sleeps. But with its release imminent, *AW* readers can watch for in-depth Toaster 4000 coverage in upcoming issues.



The AGA-compatible Video Toaster 4000.

The rebirth of the Amiga began, but did not end, with NewTek. Highly visible next to an enormous Sony extravaganza in the main hall sat a large and well-appointed ***Digital Processing Systems*** exhibit. Like nearly all vendors touting Amiga wares at NAB, DPS proclaimed Toaster compatibility with its **Personal Component Adaptor** (PCA) card ($499). Designed to work with increasingly popular S-Video equipment, PCA adds two Y/C and one Betacam/MII outputs, along with three Y/C inputs, to the Toaster.

For the Toaster and Toasterless alike, DPS previewed its **Personal Animation Recorder** ($1995) card, which can replace VCRs and single-frame controllers. Supporting direct-to-hard-disk rendering of 24-

Continued on p.10.

Even Faster A1200

Want to speed up your A1200? The **M1230 XA** (from $399, ***MicroBotics***) will accelerate your A1200 up to five times faster than the native configuration. Desirable for demanding applications such as animation, ray-tracing, and morphing, the M1230 XA offers a 68030 processor, a 68882 FPU, a real-time clock, and the option to install up to 128MB of fast RAM through SIMMs. Although the 50 MHz '030 is the standard installation, the M1230 XA is also available with a 33 MHz '030 or a 40 MHz EC030 (no MMU). MBRTEST-2, a diagnostic program for memory, and SetXA, a configuration utility, are included. M1230 XA is DOS 3.0 compatible. Price varies with the addition of memory and FPU. (RS# 124).

Another Stereo View

It wasn't until after "1+1=3(D)!" (p. 30) went to press that *AmigaWorld* learned of another means to see in stereo. Unlike X-Specs 3-D (Haitex), the original stereo gogs for the Amiga, ***MegageM's*** **AmiVR**—a video interface and liquid-crystal-shutter glasses combo—plugs in to the video-out port of any Amiga (use with the A3000 or A4000 also requires Commodore's A520 video adapter). AmiVR synchronizes the glasses directly from the Amiga video signal's sync. By connecting the interface to your VCR's output and running the supplied cable to your NTSC monitor, you can use AmiVR independently of your Amiga to see stereo 3-D movies.

Instead of X-Specs' over-under picture format, AmiVR uses a full-screen format that alternately displays left and right views (seen without the glasses, the image flickers). Used with Animatrix Modeler, AmiVR lets you model in LightWave 3D and see your objects in "true" 3-D. Imagine 2.0, VistaPro 3.0, and Imagemaster's merge facility can create left and right views for merging into stereo images.

The system comes in two configurations, both of which include an interface, cable, power supply, and case. The AmiVR1 package ($269) also provides one pair of glasses and one stereo 3D videotape of your choice (MegageM stocks a large selection of movies, documentaries, travelogues, and more). AmiVR2 ($369) provides two sets of glasses and two tapes. (RS# 150.)

To locate the vendors of products mentioned, see the "Manufacturers'/Distributors' Addresses" list on p. 102.

From p.8.
bit IFFs and Toaster framestores, Personal Animation Recorder writes animation frames to a dedicated IDE large-capacity hard disk for playback or recording to Betacam/MII video devices. NAB attendees also witnessed first-time demos of DPS's forthcoming **Personal TBC IV** time-base corrector cards ($999) for the Amiga. Complete with a GPI freeze trigger, S-Video (Y/C) inputs and outputs, and component digital 4:2:2 processing, the soon-to-be-released Personal TBC IV is backward compatible with the company's earlier TBC II and III cards. (RS #139).

Well-Toasted Multimedia

The Amiga's future looked bright in NAB's Multimedia exhibition area, as many third-party developers paraded their new and soon-to-be-released products. NewTek's LightWave 3-D 3.0 demos dazzled onlookers with admirable consistency in the Toaster Pavilion. ***Digital Micronics***, sharing some Pavilion floor space, showed its 24-bit **Vivid 24** display board ($2995) and previewed **Digital Broadcaster** ($2495), which offers 24-bit JPEG support, 4:1 to 100:1 video compression, and the ability to digitize incoming signals from NTSC, PAL, and S-Video devices. DMI also previewed **Digital MediaCaster** ($1295), which promises real-time decoding at 352×240 screen resolution and full-motion playback of 24-bit MPEG animations on the A2000, A3000, and A4000. An industry-wide shortage of logic chips has pushed the release dates of both Digital BroadCaster and MediaCaster into early June. (RS# 140).

Nearby, ***Digital Creations'*** **Kitchen Sync** ($1295) showed the benefits of having two TBCs on one card. The company of DCTV fame also previewed several Amiga products, including **SuperGen SX**, an S-Video- and AGA-compatible external genlock that is roughly four months from completion. Digital Creations also premiered its **Video Slot Box**, an AT- and video-slot expansion box. I even saw the long-awaited paint program **Brilliance**; in beta stage (flakiness notwithstanding) it looked promising for owners of AGA machines. (RS# 141).

More New Hardware, Software

PreVue Technologies was on hand with its all-new **DejaVue** Toaster-control system. Saving all your current register settings, including wipe pattern and CG page, DejaVue is a must-have for serious Toaster users. PreVue's other product, the Amiga slot-based **Toaster Timer**, uses the blackburst of color bars as reference signals. (RS# 142).

Nucleus Electronics had **The Personal SFC 2.5** ($445) on display for the first time, along with its cuts-only video-editing system, **The Personal Editor** ($645). The Personal SFC 2.5's claim to fame is its on-screen representation of popular frame- accurate VTRs, and a 25-pin to 9-pin serial-to-video port connection that leaves Amiga slots free. (RS# 143).

AmiLink (RS# 144) was demonstrating its new serial-equipped **AmiLink** edit controller ($3599). ***Byrd's Eye Software*** showed off its upcoming **Toaster FX** package, which, working with ***GVP'S*** **ImageFX**, integrates that program's 24-bit paint tools into the Toaster via the Switcher screen. The program also offers **FX Croutons**, which bring embossing, oil painting, and other effects to the Toaster's Switcher. (RS# 145).

NAB attendees had a sneak peek at ***Visual Surface Technology's*** new **Euclid VI** ($5900) and **XII** ($6700), two camera-equipped 3-D object digitizers (each roughly the size of an efficiency-apartment refrigerator) designed for use with LightWave 3-D. Place a flower vase or similarly-sized object in them, fire up a motor-driven rotating floor, and two cameras capture the objects' proportions and surfaces for LightWave processing. Although the digitizing process is time-consuming, the results looked mighty impressive. The VI model holds objects up to 8×6 in size, while the XII is for 18×12 items. (RS# 146).

Eager to test the waters of other platforms, but with feet firmly planted in the Amiga market, ***ASDG*** was highly visible with two booths in the Multimedia area (RS# 147). It showed **T-Rexx Professional** ($249) for the first time. An upgrade to the original T-Rexx, which ASDG bought from KludgeCode, it generates ARexx scripts for controlling the Toaster. ***Scala Inc.*** previewed its all-new **Video Toaster EX** ($395), which allows full Toaster control from within Scala software. (RS# 148). Finally, **Real 3D 2** ($699), a high-speed AGA-upgrade to ***RealSoft's*** 3-D rendering, modeling, and animation program, wowed the crowds. (RS# 149).

It was great to see the Amiga at NAB taking its place alongside high-end workstations. A new lease on life? ***—Tim Walsh***

New and Improved

Vortex has upgraded the software for its PC/AT emulators, **Golden Gate 386SX** and **Golden Gate 486SLC**. It is now possible to use Amiga floppy-disk drives as PC drives under Windows in enhanced 386 mode. Other improvements include better keyboard emulation and multitasking support. You can now assign keys to an individual key code, and prioritize Golden Gate as one of many tasks. This upgrade is free; to get it send a self-addressed, stamped envelope to Vortex at 3835 Richmond Ave., Suite 138, Staten Island, NY 10312. (RS# 120).

F-Basic 5.0 ($99.95, ***Delphi Noetic Systems***) offers access to PAL and all screen modes of ECS and AGA. The upgraded language system also supports telecommunications devices via the serial port. The **System Source Level DeBugger** (SLDB) is bundled with F-Basic 5.0 for $159.95. The SLDB allows you to debug at the source level, one source line at a time, or at the assembly level with similar functions. F-Basic 5.0 is AmigaDOS 1.3, 2.0, and 2.1 compatible, and is available to current owners (SLDB 5.0 included) for $19.95.(RS # 121).

Polyhedra 1.2 ($29.95, ***Technical Tools***) now supports more 3-D modeling programs, including Imagine (Impulse), LightWave (NewTek), and Caligari (Octree). The upgrade costs $7. (RS# 122).

Quarterback Tools Deluxe ($125, ***Central Coast Software***, a division of New Horizons) package of hard-disk utilities, now supports Workbench 2.0 and 3.0, as well as ARexx. The upgrade claims performance up to 20% faster than its predecessor and an improved interface. Complementary programs offer security and protection features; Encryptor, for example, provides password protection for your documents. Quarterback Tools Deluxe requires 1MB of memory and Kickstart 1.2 or later. (RS# 123).

Sign Design

The **Sign Engine** ($559.95, ***Parallel Motion Graphics***) offers unique applications for creative entrepreneurs and film-production studios. Designed for motion-picture production use, the multitasking Sign Engine lets you make professional, self-adhesive vinyl signs with an Amiga hooked to a vinyl-cutting plotter. The software is compatible with most popular drawing programs and vinyl-sign-cutting plotters including Gerber (with Parallel's Uni-Link card). With the addition of an engraver (Sign Engine supports Roland CAMM-2 and New Hermes Vanguard models 7000 and 9000), you can engrave plastics and metals to create plaques and badges. The Sign Engine comes with a dozen Type 1 sign fonts with more on the way from Parallel Graphics. The Sign Engine works with any Amiga (including A1200 and A4000) but 5MB RAM (2MB chip RAM), an accelerator card, and a multisync monitor are recommended. You'll also need a 400–600 dpi black-and-white scanner and drawing software. (RS# 125). ►

Home Movies

Movie Maker ($895, ***Interactive Video Systems***) lets you create, edit, and play animations right off of the hard disk, you need not rely on tape as storage media. With a familiar VCR-like control screen, you can cut and paste frames as if you were editing documents in a word processor. Frames are identified with SMPTE time code so they can sync with the 16-bit stereo sound provided by the Perisound 16 audio card that is included with the system. Supporting Perisound 16 is the Audio Editing Software, which samples and edits the sound files. Overall performance is contingent upon your system's frame rate, image resolution, CPU speed, and hard-disk transfer rate. (RS# 127).

In Sync

SMPTE Output ($249, ***SunRize Industries***) generates LTC (SMPTE) time code and sends it out through the Amiga's audio jack, letting you stripe time code onto audio and video tape. You can use it by itself or as an expansion module for SunRize's Studio 16 audio-editing systems. SMPTE Output locks to the sync pulse of each frame of video when used with a genlock or NewTek's Toaster. The software can also sync audio and video decks together, slave VTRs to the Amiga, and synchronize audio decks using a sync box. SMPTE Output is NTSC and PAL compatible, works with any Amiga, and requires 1MB of RAM. (RS# 133).

Oscar-Winning Team: Amiga, Toaster, and D2

If you've been dreaming about the day when the Amiga and economical video tools could create an Academy Award winning film—your fantasy just came true. This year, The Empowerment Project won an Oscar for Best Documentary Film with *Panama Deception*. The group edited the film on 3/4" SP videotape, and color-corrected it through NewTek's Video Toaster on D2 composite digital tape using a unique capability called "pre-read." Then—believe it or not—35mm film prints for theatrical distribution were made from the video master!

Production Coordinator Gary Meyer (now with Sweet Pea Productions) secured US Department of Defense battle footage taped by the Pentagon during the Panama invasion. Production folks combined this footage with video from Panamanian sources showing newly discovered grave sites of civilian casualties. Shot by anxious camera operators under difficult conditions, much of the footage was wildly out of color-balance; some footage came from multigeneration copies of 8mm and VHS sources. The Empowerment Project edited all this, together with interview segments taped in Panama and the US, onto 3/4" tape using tube cameras of varying quality.

Co-producer David Kasper sent the edited program to Video-It Post, an innovative post-production facility in Culver City, California, which copied the full 3/4" SP tape over to D2 composite digital tape. The digital format stabilizes chroma crawl found in nondigital NTSC video and eliminates generation loss problems. The facility then perfected the shot-by-shot color correction with pre-read, which uses the dynamic tracking heads to pull audio and video signals from the D2 master tape into a special-effects console. This they corrected, mixed with other video signals, fed back into the D2 editor, and re-recorded onto the same master tape—as if it were a signal from a B-source deck.

Video-It (310/280-0505) discovered the potential power of pre-read for low-budget producers in 1989 and has since refined it into what they call $D2^2$. The facility networks five Amigas on-line for multiple effects, and uses InnoVision's Broadcast Titler for text. The D2 pre-read signal is routed through a Video Toaster switcher, which maintains first-generation master-quality, good enough to make the final 35mm film print for theatrical distribution.

At $225 per hour this method is much less expensive than D1 processing—and it's much faster: The full 90-minute program was corrected in two hours. The decision to do the color correcting on D2 brought the quality level of the entire production up to feature film standards, and on Oscar night the producers of *Panama Deception* walked away with a golden statue—the realization of every home-video producer's dreams.

—Patric Hedlund



ON-LINE SCAN

By Tim Walsh

As the keeper of *AW's* sole A4000, I'm continually asked by co-workers to capture AGA-generated screens. For this task, I use a PD program residing in the Amiga area of every network—QuickGrab 1.1 by Steve Hines. Operating as a commodity under OS 2.0 through 3.0, QuickGrab handles AGA screen modes quite nicely.

And while we're on the subject of 2.0+ commodities: Most nets harbor version 1.80 of Hans-Peter Guenther's WCOMM. Complete with a clock and palette window, WCOMM lets you cycle screens via user-defined hotkeys. Another commodity, HuntWindows 2.6 by Jorg Bublath, has won rave reviews thanks to its ability to create scrollable screens larger than the visible area of your monitor.

To determine your Amiga's performance in a variety of areas, Amiga Intuition Based Benchmarks (AIBB) has seen recent revisions and now lingers at version 6.0. Another interesting program, Dashboard 1.4 is an OS 2.0+ utility by Marat Fayzullin that uses dashboard-like gauges to display CPU activity, as well as chip and fast RAM usage.

For those so inclined, BIX recently freshened its entire lineup of Amiga software tools. Commodore's Carolyn Scheppner has provided Mungwall 37.69 and Munglist 37.10, which are compressed together in one file called munwall.lha. No stranger to programmers, and best described as a memory-allocation manager, Mungwall examines memory for software use. The program also collects information at the start of each allocation for Munglist to output. The Mungwall and Munglist combo is unmatched for finding memory, and creates a fairly accurate list of memory locations and the programs that allocated them.

Commodore's Enforcer is a nice complement to the Mungwall/Munglist duo. As of this writing, the Amiga area on BIX provides the most recent update (37.39) under the filename, enforcer.lxh. Written by Michael Sinz and approximately 68K in length, it offers 68040 support and such new options as date and time stamping of "hits."

More recent heavy hitters in the BIX Amiga technical ring include Douglas Keller's popular FindHit 37.1 (filename findhit1.lha). It reveals in C source code the line numbers where Enforcer and Mungwall hits occur.

While retrieving any or all of the above, take a moment to download the small utility called findline.1zh, which finds the source lines for Enforcer and MungWall hits. □



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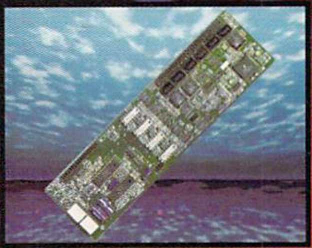


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Video Output Standards	NTSC, NTSC 4.4, PAL
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Composite (Luma) Bandwidth	4.5 MHz typical
S-Video Bandwidth	5.5 MHz typical
Hue Control	+30 to -30 degrees
Video lock jitter	<15ns
Horizontal position adjust	-320 to +1000 ns
Horizontal lock range	+/- 1200Hz typical
Subcarrier lock range	+/- 350Hz minimum
Linear Keyer input speed	>7 MHz

Audio Performance

Audio Inputs	10 inputs (5 left, 5 right) line level 20k ohms
Audio Outputs	2 outputs (Left, Right) line level 70 ohms
Input Mode	Differential for very low noise
Frequency Response	20Hz - >20kHz
Frequency Equalization points	59 Hz, 205 Hz, 790 Hz, 2.95 kHz, 12 kHz
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Supported Broadcast Standards: NTSC PAL	Supported Broadcast Standard: NTSC NO
Inputs/Outputs: 9 Video Inputs 5 Video Outputs Key in/out Master Sync In	Inputs/Outputs: 4 Video Inputs 2 Video Outputs NO NO
Supported Video Standards: Composite Video S-Video Y/R-Y/B-Y (YUV / Betacam) RGB	Supported Video Standards: Composite Video NO NO NO
Audio Mixing 5-Band Equalization 10 Audio Inputs (5 Stereo Pairs) 2 Audio Outputs (1 Stereo Pair)	NO NO NO NO
35ns Character Generator	35ns Character Generator
Compatible with all Amiga 3D software	Includes Lightwave™ 3D
Full-Color, 24-Bit, 16 million color real-time animation playback in multiple modes	HAM-8, Maximum 256,000 color animation playback generated through Amiga 4000, not the Video Toaster Hardware
Genlock with Luma Keying	Genlock with Luma keying
Chroma Keying on any color	NO
Video Sandwich Keying	NO
Transparency Keying	Transparency Keying
Integrates into the Amiga Environment Frame Buffer accessible by all Amiga Software	Takes over the machine Limited Frame Buffer accessibility to 3rd party software
Numerous pre-set DVE effects Vector-based effects editor for unlimited custom effects.	Numerous, pre-set DVE effects NO
Optional de-interlacing of Video and Graphics	NO
Includes Award-Winning OpalPaint™ software with real-time 32-Bit painting	Includes Toaster Paint™. Operates in inferior quality HAM mode, renders to composite software for viewing
Time-Base Correction unnecessary for Frame Grabbing	Time-Base Correction usually required for Frame Grabbing
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V3.1 of 24-bit video digitizer card and control software.

V-LAB V3.1

MacroSystems US, $499.95

A2000/3000/4000
Hard-drive installable software.
Not copy protected.
Accelerator compatible.
AGA compatible.
Requires Amiga DOS 2.0 or greater (Kickstart V37.175 and Workbench V37.67 or above).
Recommended minimum system: 1MB Chip RAM, 2MB Fast RAM and 50MB hard drive.
Installation: Easy, but exercise care.

The V-Lab video digitizer card for the Amiga 2000, 3000, and 4000 grabs single fields or frames in 1/60 or 1/30 of a second, respectively, and grabs sequential fields or frames as well. Available in NTSC or PAL formats, composite or Y/C versions, the package also includes a disk and a 150-page manual. I tested the V-Lab NTSC composite version in an Amiga 4000/040 with 2MB Chip and 4MB Fast RAM.

CLOSE TOLERANCES

The V-Lab auto-config board fits any 100-pin Amiga slot and has no jumpers or DIP switches. Since it doesn't use the video slot or RGB port, it should work in conjunction with other video devices. The V-Lab's rear mounting plate would not seat fully because the edge of the card rested hard against the PC-slot connectors. Tightening the rear plate screw appeared to stress the card.

The NTSC V-Lab has two RCA-style input connectors, solder-mounted with braces but not attached to the rear plate. Since RCA connectors are not as rugged as BNCs, I urge caution when you're forcing overly tight RCA plugs into the board.

The V-Lab V3.1 software installed easily with the provided program that controls all setups via menus and windows. MacroSystems has included YUVN and VLAB loaders for ADPro users. The YUVN loader reads V-Lab's image format, and ADPro's Universal loader defaults to this YUVN loader when it recognizes the format. The VLAB loader provides basic control of V-Lab's framegrabbing functions from within ADPro.

ARexx fans will delight in finding more than 125 ARexx commands included with the package. Many provide more accurate control than V-Lab's menus, with some procedures available only through ARexx. Several complete ARexx scripts are included, as well as DOS scripts to control V-Lab from a Shell. You can easily access these ARexx and macro scripts from a V-Lab menu.

To locate the vendors of the products reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 102.

POSITIVE SIGNALS

The manual is well organized, and comprehensively covers each menu function and its ARexx equivalent. A separate section covers all ARexx commands a second time, along with macro commands. The manual includes some basic information on video signals and terminology and has quickstart and troubleshooting sections.

V-Lab's Monitor window displays incoming full-option video in grayscale on your screen, like a picture-in-picture display. The software takes full advantage of AmigaDOS 2.0–3.0 and can open on the Workbench or on a public screen, or can open its own screen. Processing controls provide for luminance, contrast, chroma and gamma video signal, as well as red, green, and blue color adjustments. All adjustments affect the YUVN image in memory and do not process the incoming video signal.

V-Lab grabs single images in MacroSystem's YUVN format, but its sequential images are saved in a proprietary format that must be converted with V-Lab. Two handy V-Lab macros can semi-automate the conversion process, but sequenced images must then be assembled into your favorite animation format to play as an animation. You can export images in any Amiga format, including AGA modes, 24-bit ILBM (IFF24), and something called 24-bit Deep. You can also send images to Harlequin and Retina graphics display boards directly from the V-Lab program.

BASIC INSTINCT

Like many computerists, I prefer to read the manual last. I was concerned that the filter settings and other V-Lab software options would be difficult to adjust,

W S





Images captured with V-Lab (above) compare nicely in quality with Toaster IFF24 images (below).

but that was not the case. My first attempts were met with instant success, although I did manage to lock up the machine on one occasion by accessing a file requester and then trying to exit V-Lab. Satisfied with the program's intuitive qualities, I read the manual to soak up the finer points of operation, function by function.

My two big questions concerned the image quality that V-Lab provides and the speed at which it can make sequential framegrabs. I began the quality tests by connecting both an older, professional three-tube camera and a JVC 5600 VHS deck to V-Lab's composite inputs. MacroSystems claims that V-Lab's VSC (vertical sync correction) option eliminates the need for a TBC when grabbing from videotape. Skeptical of this, I did my initial tests both with and without a TBC. I could detect no difference either way, so all further testing was done without the TBC.

First I grabbed camera stills of a colorful product package, intentionally choosing a rich red-and-blue image that should cause problems for composite video. I tried various bandwidth-filter and noise-filter settings, viewing each image in 24-bit RGB on a Firecracker24 display card to see the filters' effects. There was a visible difference, but I preferred all filtering off, which gives images a softer, less harsh appearance. Filtering would be useful for sharpening details and edges when grabbing logos, text, or drawings.

I grabbed the same camera image with my Video Toaster, saving it in IFF24 format (not Framestore) for side-by-side comparison on the Firecracker with the V-Lab framegrab with no filtering, also saved in IFF24. Although the Toaster image was slightly sharper and had a little more contrast and color saturation, V-Lab performed admirably. All in all, I was pleased with the comparative quality of the V-Lab image.

Next, I grabbed some frames and fields from VHS videotape of a clown. V-Lab did not require a TBC, but the Toaster did. The V-Lab and Toaster clown images compared very well as you can see by the side-by-side comparison of the two images in the accompanying figure. Again, contrast and saturation were the more obvious differences. V-Lab's full-frame grab with motion combines two differing interlaced fields that cause flicker, apparent graphically in the clown enlargement.

V-Lab's Deinterlace function processes the two fields to eliminate flicker. It avoids motion flicker by grabbing one field instead of a whole frame, but this uses only half the screen lines. Grabbing in 720×482 size gives an image that's just 241 pixels high. You must then rescale the image for hi-res interlaced video to fill the screen. ADPro comes in very handy here, as V-Lab has no function for this.

Satisfied with the quality of V-Lab's single frames, I tried sequential framegrabbing, which turned out to be easy. You simply set the frame count, image ►

size, any desired delay between grabs, and click Start. I hoped that an '040 processor and 32-bit memory could obtain several consecutive color frames in full video size, but I had to settle for less. Once I understood the process, I realized that V-Lab's RAM couldn't hold that much. Each frame is grabbed and saved with consecutive numbers in Amiga RAM or in whatever other storage device you choose. No doubt V-Lab's 16-bit bus limits its performance on the A3000 and A4000.

Sequencing color fields (not frames) in 180×120 quarter-screen, lo-res non-interlaced and saving to 32-bit RAM yielded a rate of 3.8 frames per second, or about every eighth frame of video. The same resolution in grayscale yielded 7.3 frames per second, or about every fourth frame, which is twice the rate of color sequencing. To get anything approaching a moderate strobe effect, you must resort to these small lo-res images. When displayed in normal video format (700+×480 pixels), the images are 1/8 of screen size. Such displays might make an interesting animated multimedia inset window. Rescaling these tiny frames to full video screen size provided a "special effect" mosaic animation.

Keep in mind that these frame rates were attained with a 25 MHz 68040 processor, with frames saved to 32-bit RAM. Slower CPUs, larger image sizes, or saving frames to a hard drive can easily drop the rate to several seconds per frame instead of several frames per second.

One very practical application for this sequencing is in automated time-lapse video. You could easily produce full-frame color sequences such as a flower opening, a sunrise, clouds blowing by, or cell growth under a microscope with no human intervention. You can set the number of framegrabs up to 9999, and the delay between frames in one-second intervals up to two hours and 46 minutes. Creating intermediate frames with some morphing software could prove interesting.

Other Things to Consider

V-Lab's NTSC images are limited to 720×525 pixels. The height of 525 includes lines above the physical screen that you normally don't see, providing a practical height of 482. Though I would prefer 736 to 768 pixels for video, Amiga hobbyists should find the 720 width sufficient. Rescaling with 24-bit image-processing software is also an option.

V-Lab's image quality is much better than standard DCTV format and a little better than DCTV saved in 24-bit, but not quite as good as Video Toaster framestores. All these devices and formats use compression to reduce data size for increased image-transfer speed. In the final analysis, you can detect little or no difference between Toaster framestores and V-Lab using consumer and prosumer video cameras or VCRs. V-Lab is even acceptable for many levels of professional use.

When weighing the pros and cons of V-Lab against other video framegrabbers, don't overlook the hidden cost of a TBC. TBC cards start at about $1000, which is double the cost of V-Lab itself. Unlike other real-time framegrabbers capable of 24-bit or near-24-bit quality, V-Lab doesn't need a TBC when grabbing from videotape. This certainly means big savings for the video hobbyist who cannot justify buying a TBC. The good quality and relative low price of V-Lab make it a worthy contender for your Amiga video hardware dollar.

—Fred Hurteau ►

Landscape generator.

VistaPro 3.0

Virtual Reality Laboratories, $99.95

Upgrade from VistaPro 2.0: $35; upgrade from Vista or VistaPro: $50.

All Amigas models.
Workbench 2.0 required.
Hard-drive installable.
Not copy protected.
Accelerator compatible.

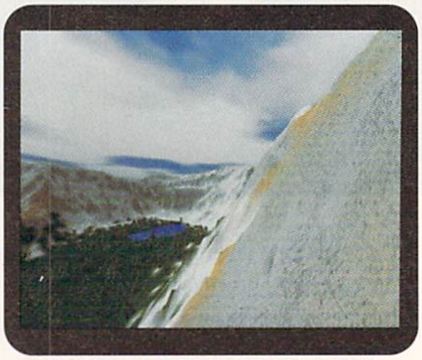
Minimum system:
1MB RAM.
Recommended system:
Hard disk, accelerator,
AGA or 24-bit display card.

Imagine a program that shows by example why you bought an Amiga. Now visualize a new and improved version of that program, and you have Virtual Reality's VistaPro 3.0.

VistaPro 3.0 is, of course, a landscape modeler. Using commercially available Digital Elevation Model (DEM) files, fractal seeds within Vista, or IFF files containing elevation data in the form of color contours, Vista can render both real and imaginary scenes of limitless variety. It arrives with a disk full of DEMs that include such famous locations as the Alps, the Grand Canyon, Mount Fuji, and a view from my own back window—Pike's Peak. Best of all, any additional data disks are available from VRL.

Pike's Peak?

Despite the truly dizzying array of buttons that occupy a full half of the VistaPro screen, using the program is straightforward, aided by the deceptively simple but thorough tutorial. Even before becoming proficient with the program, you can produce some fine-looking images with as little as six mouse clicks! After you've loaded a landscape, simply position the camera and target icons somewhere in the landscape (much like any 3-D modeler) and begin to render. Later, you can change the snow line or sea level, add trees (pine, palm, oak) or cactus, and even change the color palette for alien-looking landscapes.



The landscape above was created with VistaPro 3.0

You can add lakes, rivers, and oceans (fractal waves are optional). Looking up, VistaPro lets you add clouds or stars to the roof of your creation. Stars automatically create a night view, complete with a subtle halo of light along the horizon. Daytime scenes can include beautifully wispy fractal clouds that have to be viewed in 24-bit or AGA to be truly appreciated. You can even add roads and buildings, though they are very simple objects, hardly doing justice to the beauty of the surrounding landscape.

Depending on the speed of your Amiga, rendering a VistaPro image can take quite a lot of time—even hours. Luckily, ►

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IT'S AMAZING...

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Artwork by Jim Sachs. Created at 640x480 in 256 colors on an Amiga 4000.

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IT'S EASY...

The user interface was designed to put YOU in control, not the program. Quickly and precisely control all paint and animation features with the dynamic menuing system. It gets out of your way at the press of a button. A help window assists in identifying controls as well as current modes. The stacking menu bars can be user configured and recalled with function keys. You can even save your own configurations.

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(True color modes are represented with HAM mode displays however they are maintained in full fidelity internal representations.)

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Circle 63 on Reader Service card.

VistaPro allows you to view very coarse versions of the landscape as quick "proofs." On an Amiga 4000/040, these chubby-pixeled images often take well under a minute to process. Once you know your settings are right, you can vary the resolution and level of detail, and even add Gouraud shading. VistaPro lets you optimize the rendering for speed or detail, placing emphasis on realism or artistry.

Who could resist a flight through a VistaPro-generated Grand Canyon in high-resolution, HAM-8 color mode? The good news is that VistaPro makes such animations possible; the bad news is that without the optional MakePath program, you're forced to use VistaPro's ARexx script language. That's not to say that the script language is bad; it isn't. It's just that I'd rather navigate above tough terrain with a mouse than with the keyboard.

How about making your own landscape from scratch? Although you can create a new landscape from a fractal seed, this is a take-what-you-get sort of option. You can add a lake to the Grand Canyon, but you can't add a crater to the canyon bed. For the ultimate in terraforming, you might want to try VistaPro's other companion product, Terraform 2.0. Terraform picks up where VistaPro leaves off, having a complete set of tools for building the landscape of your dreams.

Undone and Undo

VistaPro is still not without its quirks. While VistaPro's button-laden graphic control panel works, I'd prefer to see a standard Workbench 2.0 screenmode requester. Additionally, it is possible to occasionally select a display mode that VistaPro doesn't like. When that happens, the entire application aborts without explanation, taking all your unsaved work with it.

Also, perhaps to keep you on your toes, VistaPro provides no undo button. About the only operation you can abort, in fact, is the placement of a river or lake. This is particularly frustrating because it is possible, with an errant mouse click, to move the camera and target completely out of the scene into the surrounding border. Recovery is by trial and error. Out of my experience of routinely sending the camera icon into the next dimension by mistake, I recommend you deselect the camera and target buttons as soon as you've positioned them to your liking.

Worlds Away

VistaPro can handle about any graphic format you need. In addition to ordinary Amiga display modes (including AGA), VistaPro operates with DCTV, Firecracker24, and HAM-E devices. You can save landscapes as ordinary DEM files or as VistaPro DEMs, which include camera positions and all of the rendering options you set on the work screen. You can even save the scene as a Turbo Silver object (though these files are generally very large), not to mention ordinary IFF and IFF24s.

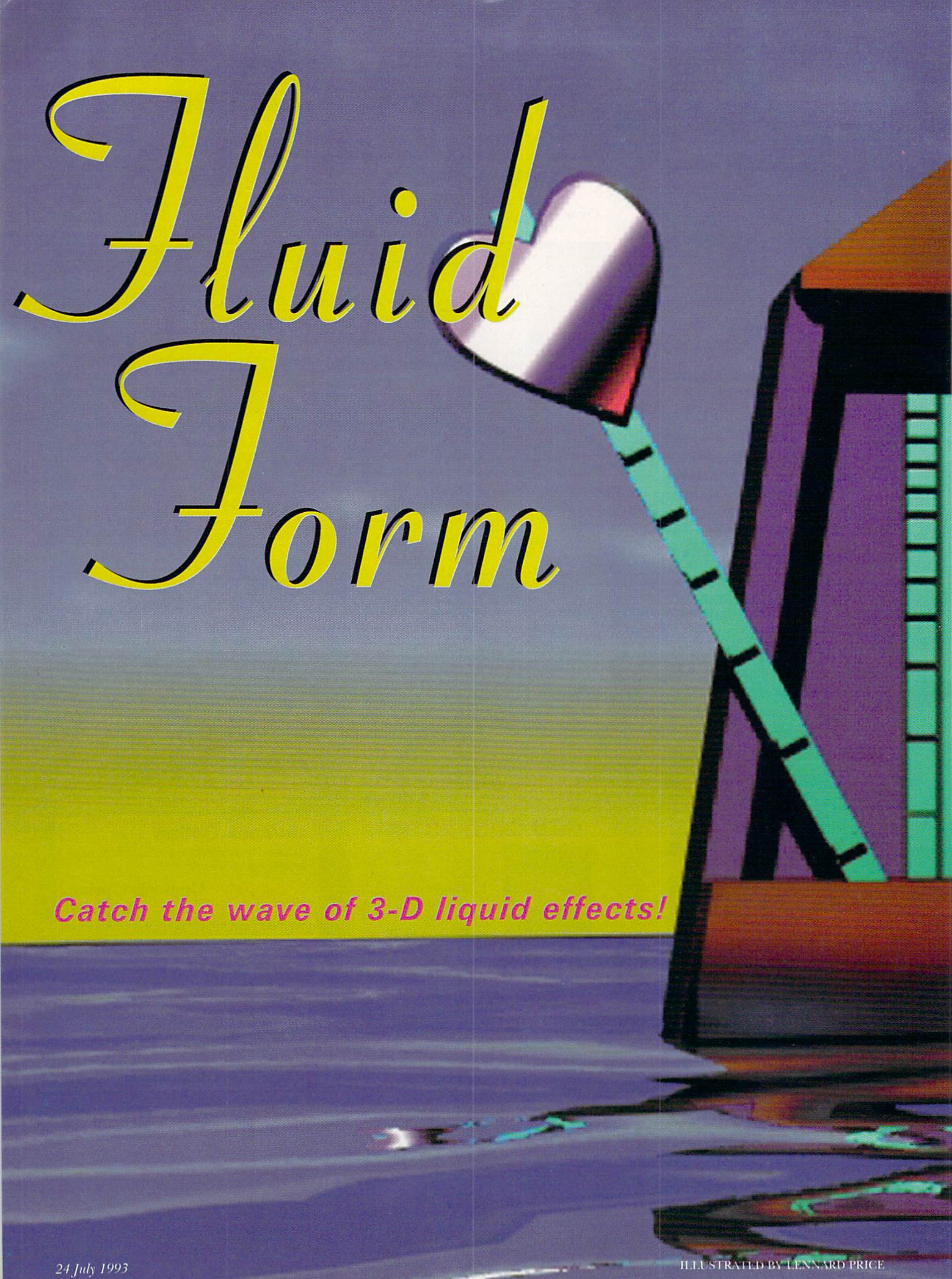
While VistaPro isn't yet perfect, it does not disappoint thanks to its power, flexibility, and sheer beauty. Try out VistaPro 3.0 and discover worlds only you and your Amiga can conquer.

—Dave Johnson

Continued on p.64.

Fluid Form

Catch the wave of 3-D liquid effects!



ILLUSTRATED BY LENNARD PRICE

THREE-DIMENSIONAL LIQUID effects have washed over broadcast commercial work like a tsunami. We Amiga users have many tools to help us catch the wave: NewTek's LightWave, Impulse's Imagine, Adspec's Aladdin 4D, and other 3-D packages include wave functions for some very professional presentations. And with a little creativity, you can hang ten even if your software doesn't provide such built-in functions.

How can you make a splash without getting all wet? I'll show you, using four examples. While I illustrate the effects using particular programs, in most cases you can apply them using the tools of your choice. (To locate the vendors of products mentioned in this article, see the Manufacturers/Distributors' list on p. 102.

A Bumpy Road to Water

This first project, for which I used **Real 3D** ($699, ***Realsoft***), lets you create perfect waves without a built-in function. The result is realistic (as you can see here in the opening illustration), and Real 3D's antialiased output is very professional. You can use the technique with any rendering package that has bump-mapping capabilities; Will Vinton's Playmation (Will Vinton) is one example of such a program.

Bump mapping is an effect in which an object's surface is shaded according to the image applied to it. Generally, the dark areas appear as valleys and lighter areas appear as peaks. Real 3D's bump-mapping feature uses red shades in the applied image to calculate altitudes; other packages use different color schemes.

The first step in this process involves creating a bump map in a paint package such as **DeluxePaint 4** ($179, ***Electronic Arts***). By selecting a lo-res screen, you can define a red range of 30 colors. Simply spread color 2 (Red = 2, Green = 0, Blue = 0) to color 15 (Red = 15, Green = 0, Blue = 0). Then spread color 15 to color 31 (Red = 1, Green = 0, Blue = 0). Using the palette-range feature, make the range start at color 2 and end with color 32. If your paint software allows, create a square filled with a random dithering of the red range. (Using random dithering is the trick to producing realistic waves, which differ immensely from the mathematically defined built-in effects.) The brush need not be larger than 100×100 pixels to produce smooth effects.

One bump map is fine for still productions, but an animation requires at least 30. You should make a separate drawer in your bump-map directory to keep these sequences in order. Remember that creating sequences in multiples of 30 makes it easier to convert an animation to videotape, if that is your aim. Save the first brush as Bumpmap.0 so that your 3-D software will know it is part of a sequence. Carefully rotate the colors in the palette range plus or minus one (give color 3 the value of color 2, color 4 the value of color 3, and so on) to create wave motion for your animation. Save these subsequent brushes with the appropriate number suffix (such as Image.0, ►

By Lennard Price



Image.1, Image.2), so that you end up with 30 brushes numbered zero to 29.

Now boot up your 3-D program. Within Real 3D, select Materials Create from the menu and rename the material Waves. Because you have 30 images to sequence, type 30 into the Texture Index gadget. Adjust the materials' attributes as you wish, keeping the bump height at least at the default of 15. Select Image.0 and define it as a bump map, then adjust the smoothing and gradient settings to your preference. Click OK, and assign the material to a flat plane. By coloring the plane blue and zooming in close, you can get a good, wave-like effect. If you want to reflect objects in the water, you may need a lighter color than dark blue for the plane; Real 3D requires surfaces to be quite light for good reflections.

When test-rendering the wave, use low resolution and select Lampless mode. Need an animation longer than 30 frames? No problem—Real 3D will just cycle through the sequence when it reaches the end.

I viewed this animation in real time using DCTV (Digital Creations). The wave looked so good I couldn't wait to re-render the frames to S-VHS tape via a 24-bit display card. After I did, I found that the DCTV view looked better. With the extra resolution, the taped version looked too clean—and no longer real. You can easily correct for hyperrealism with fog effects, blurring, and so on, but isn't it nice to know you don't always need the most expensive equipment to get the best results?

Real 3D 2.0, which should be released by the time you read this, promises built-in wave functions. But even with programs providing these capabilities, I found this bump-map technique to be superior in several instances, producing original and life-like effects.

Turning Up the Heat

Waves are also easy to create with Aladdin's rich environment of texture procedural mapping. With both Real 3D 2 and **Aladdin 4D** ($499, ***Adspec***) offering unlimited mapping per object, some out-of-this-world effects are possible. You could start with a lake full of waves, for instance, and make it freeze and then thaw during an animation. The creativity afforded is limitless—and creativity means "wave effects" need not be limited to liquids. After all, at high enough temperatures, liquid becomes gas.

Aladdin 4D is the first Amiga package to provide for gaseous 3-D effects with unlimited, sequential textures. I took advantage of this in a recent animation. I had a detailed spaceship ready to do battle when I realized the craft had no firing canons or openings. A transition from a side panel of the ship turning into a radial wave took care of the problem. Yes, I used the pebble- dropped-into-the-pail effect, which looked 100% mathematical—but that's what I wanted. I actually reversed the waves to show a build-up to the center of the panel, from which a deadly weapon was released.

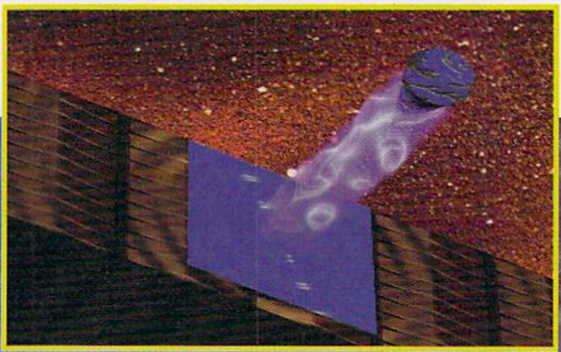
I had created the spaceship within Aladdin's editor. Once I'd set the scene and camera, I went to work assigning textures to the polygons. The procedural textures with a mixture of IFF wraps looked good on the hull of the ship, but I decided to use a gray-scale "tin plate" image over the majority of panels. Using DeluxePaint, I created a gray-scale panel with red marking and coding to differentiate it from the other panels. Grayscale images, mixed with light fog and redirected lighting, allow for great space scenes.

To work on the firing panel, I selected the panel polygon by itself. Choosing Textures from the Polygon Control menu, I loaded the panel's exit frame a few frames before I wanted the wave effect to start. Because I planned to swing the camera in fairly close, I chose the Antial option to prevent the bitmap from appearing pixelized. The panel looked realistic, but I wanted more depth. The panel's original IFF image served just as well as a bump map for depth realism. Starting at frame 355, I added a wave to the polygon for transition. I altered the wave's timing so it required a full four seconds (120 frames) to travel from the outside to the inside (this is easily done by adjusting the frames count for start and exit).

Using Aladdin's Sweep (lathe) function, I created a teardrop shape, which I dressed up to look like a fireball by assigning it several layers of sequenced textures and a gas coating. I then plotted a path for the fireball to follow, from inside the space craft to the outside, where, with some experimenting, it intersected the pinnacle of the wave.

Molten Metal

While ***Octree's* Caligari24** ($399) lacks many effects of other 3-D packages, its real-time response, deformation modeling, and fine antialiasing allow it to create great liquid effects.



Ready...aim...fire! Waves turn to gas with Aladdin 4D.



Text rising from a boiling pool of molten chrome tests Caligari24's mettle.

A recent project required a simple animation of the client's logo in chrome. Wanting to avoid another boring "logo spin job," I asked if I could try a different approach. My idea was for the logo to emerge from a bubbling pool of molten metal. The customer agreed, so I set out to experiment. Caligari24 has no bump-mapping facilities, but its Free Form Deformation functions, which produce smooth objects via point editing, allowed easy creation of bubbling metal. I just had to find away to incorporate the wave.

I'd had AsimWare's CD-based 24-bit textures collection for about a week and couldn't wait to apply one of its tiled images in a 3-D scene. Caligari's high-quality antialiasing negates the need for hi-res image wraps, though I kept the textures at their original sizes. With one, I was able to simulate a smooth, glossy floor; another gave the walls a modern brick design.

Because Caligari24 is so forgiving with input quality, you can get amazing results by importing DCTV-digitized or DPaint-generated images. In DPaint, I created a few rounded puddles. I extruded and beveled these using **Pixel 3D** ($249.95, ***Axiom Software***); a router bit gave a smooth curve. Also using Pixel 3D, I beveled and extruded a few bitmapped fonts for the logo.

I then entered the render module to assign attributes to the logo, puddles, and walls. I assigned a chrome attribute to the logo and puddles, and made the logo a little darker. The image maps from the CD were large enough to cover the whole wall without pixelation, so tiling was not needed. With the scene ready to go, it was time to plan the animation.

I intended the camera to zoom in on the puddle (which is actually made up of several objects), and show the logo slowly rising up, while the puddle resizes to suggest that molten material is being drawn from it. I set up the keyframes, resizing the component-puddle objects at different times. (This was tedious because the puddles not only had to intersect cleanly, but also lose depth.) As the last letter of the logo emerged from the molten liquid, the puddle disappeared altogether.

While the test animation looked fine, I decided I would prefer new environment maps for the logo. Then, to add the bubbling wave effect, I created a few flat planes that roughly matched the puddles' shapes. Editing these objects with the deformation tools, I produced smooth waves in the planes. I generated a few more bump planes and returned to the scene creation. The hardest part would be animating the bumped planes properly. With Caligari24's new time bars and real-time feedback, I was able to assign and reassign the bumps' up-and-down motion and adjust it according to the puddles' depth fluctuations. I also synced the bumps to produce a smooth, rolling effect. Finally, I created another environment map for the puddles and plane bumps to get the best chrome look possible.

The Fast Lane

Imagine ($495, ***Impulse***) users can easily apply the above techniques to create liquid effects. But Imagine also works gracefully with such 2-D programs as **Imagemaster** ($199.95, ***Black Belt Systems***), **ImageFX** ($249.95, ***GVP***), or **Art Department Professional** ($299, ***ASDG***), which all produce 3-D-like waves and ripples. Though the 2-D software approach is not right for every case, it is worth considering, as these programs can usually do the job faster than 3-D software.

A sample animation can illustrate: A framed picture spins onto the screen. It stops, the picture changes to another image via a ripple effect, and then spins off the screen. This animation requires sequences of images for image wrapping. Although you could provide a wave effect for the images with Imagine, I decided to leave that job for Imagemaster. Because I wanted the animation to last 10 seconds (300 frames), I needed about 100 frames of wave distortion and 20 frames of morphing (also done within Imagemaster).

I started by generating the first and final 60 frames of wave distortion. After 60 frames of wave distortion, the images look fairly obscure. So a morph between these two segments provides a smooth transition. By saving the frames with sequential names (FrameIn.001, Morph.001, FrameOut.001), the task becomes easier to define within Imagine. Using Imagine's Action editor you can assign the paths appropriately with a slight ease in and out.

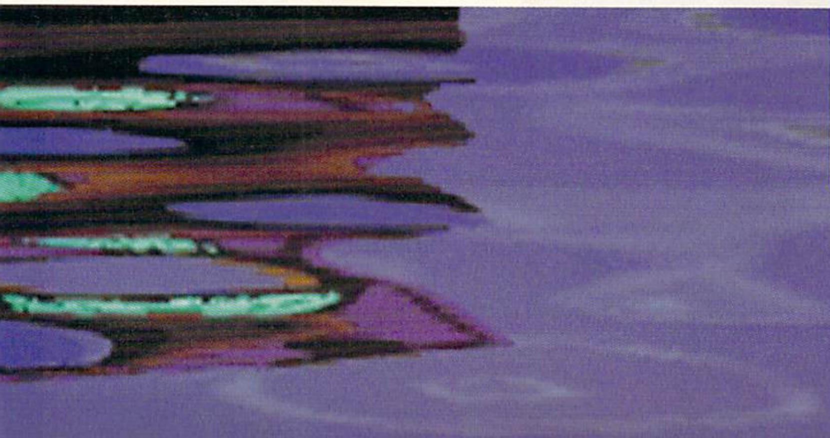
In addition to these programs, I found a supply of utilities capable of working with primary 3-D applications to produce fluid effects. **Wave Writer** ($129.95, ***Unili Graphics***), **Morphus** ($119.95, ***Impulse***), and **Icoons** (freely distributable, by Helge Rasmussen) let you create or modify waves for LightWave, Imagine, and Will Vinton's Playmation, respectively.

While imminent updates to LightWave, Real 3D, Playmation, Caligari, and other programs promise to rock the boat in terms of Amiga wave effects, don't wait to dive in. There are plenty of effects in the sea! ■

Lennard Price is a Canadian-based freelance computer artist specializing in 3-D effects. You can reach him on GABB II (Graphic Amiga Bulletin Board) at 416/547-1690 or c/o ***AmigaWorld*** *Editorial, 80 Elm St., Peterborough, NH 03458.*



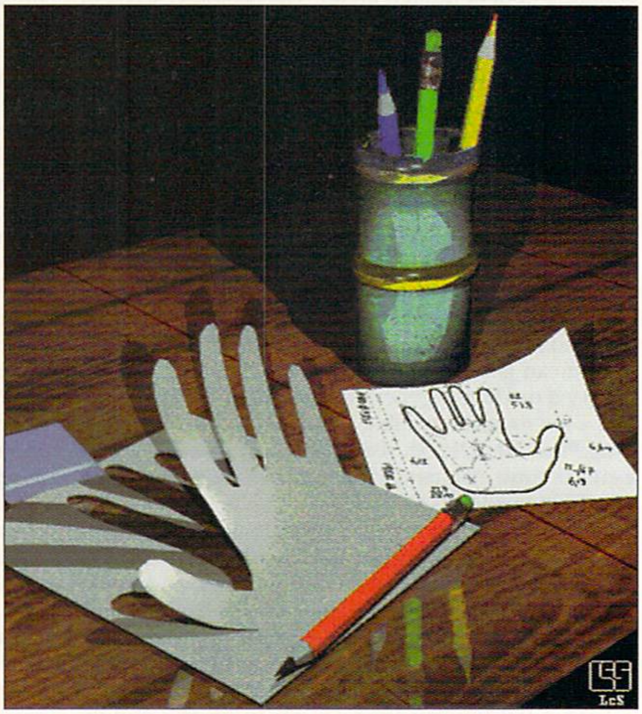
A combination of 2-D and 3-D programs made quick work of waves within Imagine.



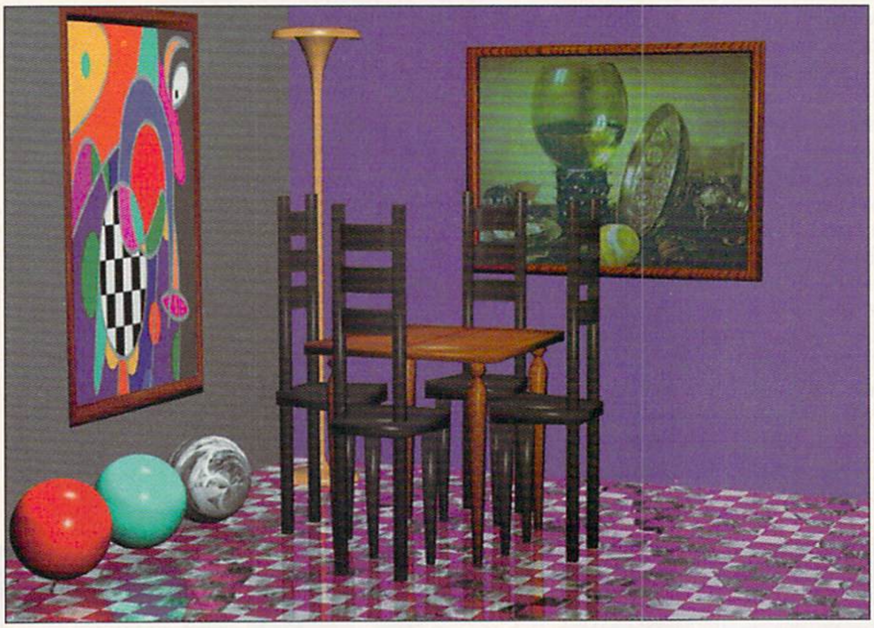
More In Depth

We can't get enough of beautiful, Amiga-generated art. It's not only fun to look at, it's inspirational as well.

Our focus on 3-D graphics this issue gives us a great excuse to celebrate the achievements of innovative artists. Our art department culled this exciting collection from the many responses received from our calls for Amiga art. Thanks to all who have participated; we hope you will continue to submit your works. We also hope to feature similar displays in the future. Enjoy!



We think that **LORENZO COLLORETA** deserves a hand for his ***Drawing Hands***, a HAM-format image created using Imagine 2.0 and DeluxePaint 4 (Electronic Arts). Lorenzo, a biology student at the University of Florence in Italy, fell in love with ray tracing four years ago when he began with Sculpt 3D (Centaur). Lorenzo hopes to create future works in HAM-8 or 24-bit; like many of us, he's saving for an A4000.



All alone in a room with only his A2000, a few pieces of Amiga software and hardware, and plenty of time, Belgian artist **MICHEL RIGO** creates 3-D worlds, such as the one depicted here in ***Salle***. Michel created all of Salle's objects within Impulse's Imagine 2.0; the stone textures came from Computer Imagery's Map Master collection. The two framed pictures on the walls are 2-D imports: the colorful one at left is a DeluxePaint original, while the still life is something he digitized using the Austrian 24-bit digitizer, VD2001.

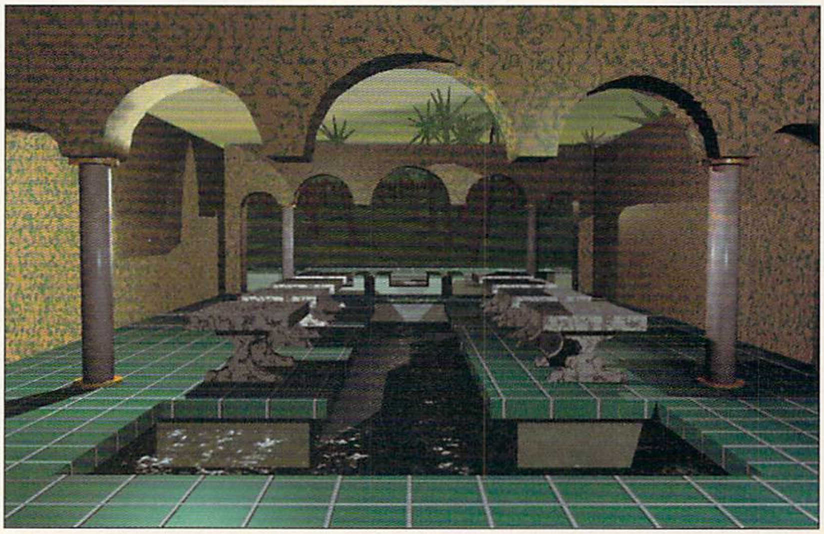
STEPHEN WOOD of Ales, France, started in 3-D imaging on a Macintosh. There, he mastered the creation of photorealistic scenes involving metals and reflective surfaces. After joining the Amiga ranks about a year and a half ago, Stephen was inspired by the work of Anti-Gravity Workshop. (AGW co-founder Tim Wilson's rendering won *AmigaWorld's* 1992 Special Issue a Gold award from *Magazine and Bookseller.*) Stephen's beautiful ***Magic Mirror Reflexion***, created using Imagine 2.0, took 14 hours to render on a 68040-based A3000.





STEVE GALE'S artwork could make an Amiga evangelist out of anybody. In fact, as Art Director for a producer of computer-based product demos in New Jersey, Steve converted his company's traditional 2-D approach to include 3-D ray-traced imagery. His inspirational ***New Church*** sets the 3-D building (rendered in Imagine) against a 2-D background (which he processed from a Targa file using ASDG's Art Department).

Self-taught artist **ANTHONY C. GROS** enjoys the realism that 3-D allows. Indeed, his ***Oasis*** seems so cool and inviting you almost want to step right in! Perhaps Anthony, a Houston resident, was looking for a way to beat the Texas heat when he decided to render this scene with Imagine. He did some touch-ups using the Firecracker's Light24 (Impulse) and Art Department Professional.





PHOTOGRAPH COURTESY OF THE BETTMANN ARCHIVE

1+1=3(D)!

You don't believe it? Well, try these simple techniques for creating Amiga images and animations in "stereo pairs," and you'll open up some fascinating opportunities for 3-D stereo viewing.

TO MANY PEOPLE, the idea of viewing 3-D images conjures up scenes of a 1950s theatre (or doorstep...) and people wearing cardboard glasses with red and blue cellophane lenses. In fact, 3-D stereo imaging takes many forms, and is a serious and exciting tool for science and art. Whether you're a professional Amiga artist, an amateur animator, or an enthusiastic computer user searching for a little diversion—creating stereo graphics on your computer can be a rewarding experience.

While you won't need a background in trigonometry or neuro-optics to get underway, to fully appreciate stereo imaging on your computer, you should understand a few basic principles. Each of our eyes projects a slightly different view of the world onto our retinas. Our brain transforms this information into a stereoscopic image that conveys meaning about the dimension and spatial relationships of objects around us.

For more than 150 years scientists, artists, and photographers have experimented with ways to portray stereoscopic images that mimic this dramatic natural phenomenon. As an Amiga artist, you have at your disposal some of the most exciting equipment ever available for exploring this field.

The stereo effect depends on two precisely related images. You can create such a pair by horizontally shifting the point of view between two images. In viewing this pair, if your left eye sees only the left image and your right eye only the right image, a stereo effect is possible. A few basic principles apply to both photography and computer graphics:

- The two images should originate on the same horizontal plane with no vertical misalignment. In photography, this is often accomplished by moving the camera horizontally on a level fixed slide.
- As a rule of thumb, the separation of the two points of view should be about 1/30 the distance to the nearest object in the image.
- The most effective alignment of the two images for viewing is to superimpose the nearest objects in both images. The entire stereo view then seems to lie beyond the image plane or the computer screen.

EYE FOR DETAIL

On the computer, one of the most exciting ways to experiment with stereo graphics and animation is with special goggles equipped with liquid-crystal display shutters. The **X-Specs 3D** stereoscopic glasses ($149.95) produced by ***Haitex Resources*** plug into the second mouse port on the Amiga and synchronize with the interlaced display. This display is updated every sixtieth of a second. On every odd sixtieth, the left-eye view is displayed to every odd scan line. At that instant, the left shutter of the glasses clears while the right shutter darkens. On every even sixtieth the reverse happens, displaying an image to the right eye. These views switch so fast that the brain combines the information into one stereo image. Typically, you must disable any de-interlacer to view stereo with LCD glasses.

You create left and right eye views as separate files, then use the X-Specs software to combine and view ►

BY JOEL HAGEN

them in stereo. For example, running the X-Specs M3D program allows you to load a left and right picture, view them as a stereo image, adjust left/right separation, and save a single combined stereo view. D3D is an included display program for these stereo views. Figure 1 shows the format of a D3D stereo file. Left and right images are stacked in a single interlaced picture that is decoded for display. Strangely, with Centaur's OpalVision board installed in an A3000, M3D and D3D allow stereo display in the de-interlaced mode. This gives a remarkably brilliant display, but has a lot of us scratching our heads. It seems that it shouldn't work.

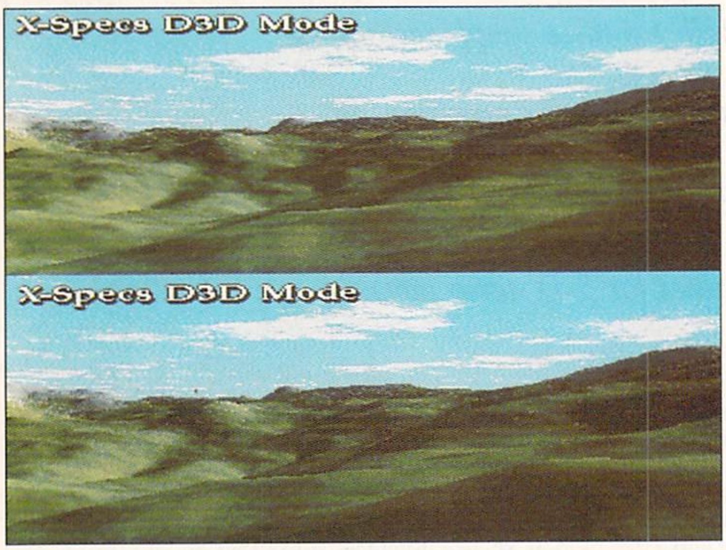


Figure 1. The "over-under" format of an X-Specs D3D stereo image. Left and right views are stacked in a single interlaced image. The views were created in Scenery Animator.

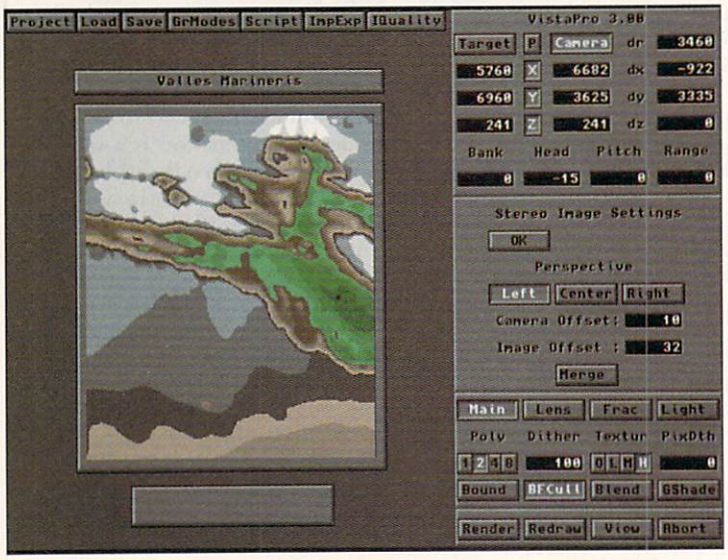


Figure 2. The VistaPro 3.0 interface can be used for creating stereo views.

Figure 1 is a random fractal landscape from **Scenery Animator** ($99.95, ***Natural Graphics***). To create a similar stereo landscape, point the camera straight North on the Map screen to generate the left-eye view and save it as "Landscape-L." Enter a new East setting on the Map panel that moves the camera 20 units to the right of the previous setting. Don't change the altitude, or you will violate the vertical displacement rule mentioned previously. Generate this right-eye view and save it as "Landscape-R."

Unfortunately, it is very difficult to create a good stereo pair in Scenery Animator in any orientation other than straight North-South or East-West. At other map angles, there is no easy way to keep a constant distance between camera and target. Run M3D to load, adjust, and view your stereo landscape. Remember that the most effective orientation of the two images is usually to adjust them so that the nearest objects are superimposed. The landscape then lies beyond the plane of the screen. The amount of new information revealed in the 3-D view may startle you.

BIRD'S EYE VIEW

Landscape-generation software is a great way to introduce yourself to this field. Producing a good stereo pair is easy and the added dimension is powerful. **VistaPro 3.0** ($99.95 ***Virtual Reality Laboratories***) has direct support for X-Specs. Pressing the Stereo button on the main screen brings up the interface shown in Figure 2. This allows you to enter displacement values for the camera as well as the image pair that will be merged. The real power in this interface is that it allows you to create an accurate stereo pair from any map angle. You can view a pair of generated images from VistaPro using the Merge button.

VistaPro does not save the combined views as a stereo image, nor does it directly support stereo animation. On the Vista bulletin board, however, (805/781-2257) is a free program called Smash that works with MakeAnim to merge a list of stereo pairs from a pair of Vista animation scripts. A little patient work could yield an impressive flight through a stereo landscape. By the way, VistaPro 3.0 has powerful new features that break up near-polygons into very realistic texture. Truly superb control of the landscape is possible. (For a complete review of the 3.0 upgrade, see p. 20 in this issue.)

Any version of Vista or VistaPro can be used to create a stereo pair. The easiest method is to keep the target locked and move the camera a little between views. Before moving the camera, lock the Z button and note the dR value, which is the distance from the camera to the target. Move the camera, then re-enter the previous dR value.

Remember to lock the palette before generating the second image. Beware of having a chunk of landscape right in front of the camera or you may violate the 1:30 guideline for camera separation. Since the target remains stationary in this method, distant objects superimpose and near objects are displaced. For best viewing, the image displacement should be adjusted to superimpose the nearest features. Failing to do this forces the foreground out of the screen plane, which seems more difficult for the brain to resolve. These are merely rules of thumb; always experiment to find what works best.

Picture This

For X-Specs viewing, I find it best to manually merge two stereo images and save them as a single interlaced picture. Figure 3 shows such a stereo view of Candor Chasma on Mars. For future reference, let's call this the "interleaved" method. The advantage to this technique is that you can work in the Amiga's highest resolutions, including 24-bit color, even creating standard animation files you can play from any utility.

To try this technique, save a stereo pair of hi-res 16-color images in VistaPro or Scenery Animator. In DeluxePaint (Electronic Arts), open a screen to match the resolution of your landscapes. Clear the screen to pure white and fill every other line with a horizontal single-pixel line of pure black. The finished screen should alternate white and black single-pixel lines. In the Stencil requester, lock the black, click Make Stencil, and save it as a stencil named "Stencil-Left." Next, Reverse the stencil and save it as "Stencil-Right." These can be used again and again in creating interleaved stereo pictures and animations.

Now load the left landscape image, then load the left stencil and turn it on. Select black with the right mouse button and clear the screen. Every other line clears to black. On the spare screen, load the right landscape and right stencil, and then clear that screen. Making use of background color transparency, pick up one entire screen as a brush and place it on the spare screen interlaced with the other view. Adjusting the left/right placement is easier if you hit Alt-x to shift the brush handle to a lower corner. Superimpose foreground elements and stamp the brush in place. The Mars illustration in Figure 3 shows the interleaved pair before this adjustment. If chip RAM is a problem, select Merge in Front from the Spare menu to combine two images.

To view interleaved stereo images, run ON3D from the X-Specs drawer. This activates the glasses, synchronizing them to the interlace of the monitor. Note that you must have any de-interlacer disabled for viewing with LCD glasses. Any display program will suffice for viewing the image as long as ON3D is running in the background.

If you own a scanner or video digitizer, you can bring real-world photos into the Amiga for stereo manipulation and viewing. Follow the guidelines laid out earlier in the article to shoot prints, then digitize them and try M3D or my interleaved stereo method for viewing with X-Specs. Video footage in which the camera pans smoothly past a scene can also provide excellent stereo pairs.

Brush Up

It is relatively easy to produce dramatic hand-painted stereo images with any paint program that has spare-screen capabilities. Just paint a left and a right version of the image. Figure 4 shows a few basics that work well in DPaint. The easiest experiment you might try is to create several brushes that will be placed in both images. Each brush can be made to appear at a different screen depth. The formula is that a brush will appear to be behind the screen if in the left view it is to the left of its position in the right view. A brush will appear to float in front of the screen if in the left view it is to the right of its position in the right view. If this sounds like word salad, read it again while you look at the balls in the upper left of Figure 4. The blue rectangle represents the screen plane.

If you use Digi-Paint 3 (NewTek), you will find that when working in interlace mode, the program directly supports stereo painting while you wear X-Specs. Run ON3D in the background, then use the "(" key to paint for the left eye and the ")" key to paint for the right eye. This can be addictive.

To try stereo painting in DPaint making use of its spatial and animation tools, create a two-frame animation for your left and right views. Mark these two frames ►

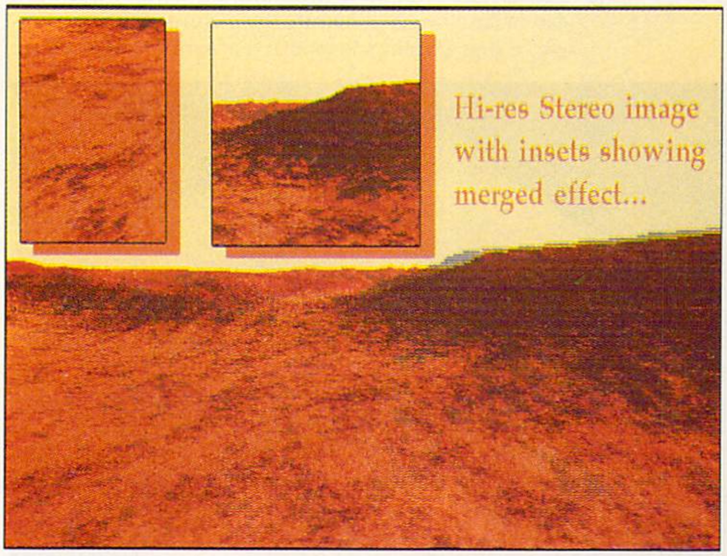


Figure 3. This stereo view of Mars was created by manually interleaving left and right views. The images were created in VistaPro 3.0 using the superb new texture settings. This merged image is intended for viewing with LCD goggles, which explains its strange appearance.

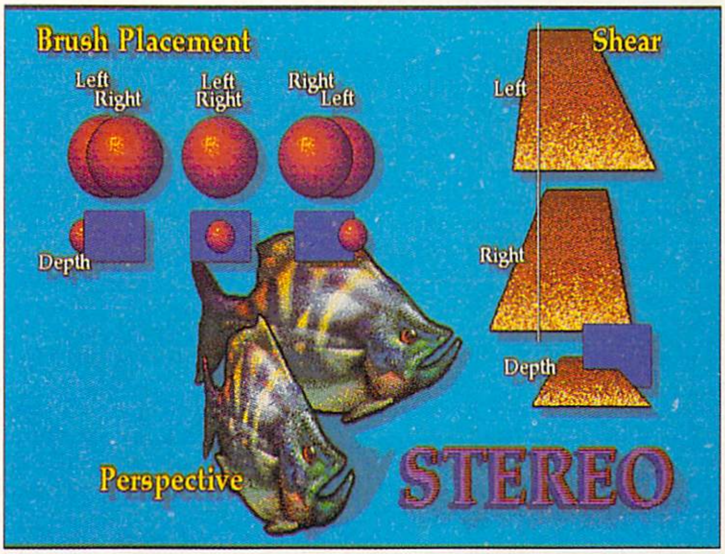


Figure 4. Some basic DPaint techniques for hand-painted stereo pictures.

as "L" and "R", respectively, until you get the hang of things. On the spare screen, create a ball and pick it up as a brush. Stamp it down on the left frame and then reposition it a quarter-inch to the right without stamping it down again. Keep it in place and press the 2 key to switch to the right frame. Stamp it in place and then save the two images as left and right pictures, not as an animation. Use M3D to load and view the result. The ball should seem to hang behind the screen.

To continue your experiment, create a detailed brush then shear it to the left and right from DPaint's Brush/Rotate menu. Positioning these views as shown can make a brush penetrate the picture plane at an angle. Using DPaint's Perspective rotation can also give

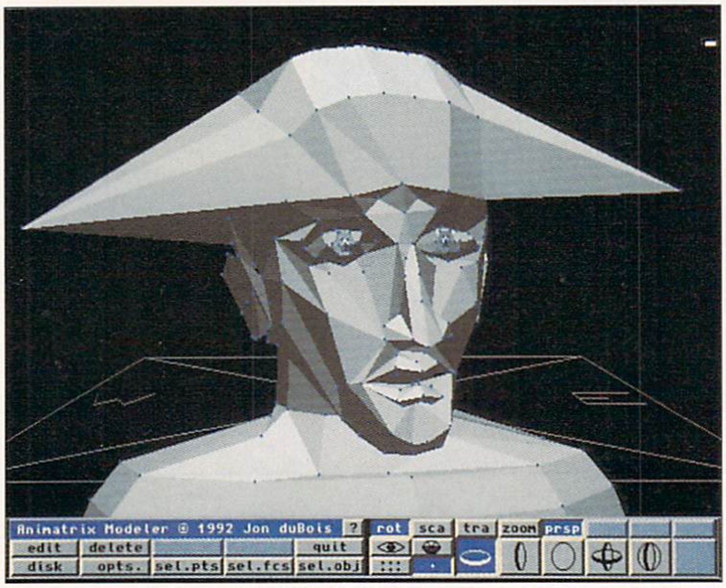


Figure 5. The left-eye view of the Animatrix 3D modeler screen, which supports real-time X-Specs display while you work.

a powerful illusion of dimension. Rotate each brush by a slightly different amount. Placement of the brush handle can affect the result.

If you read "Accent on Graphics" #48 (Feb. '93, p. 60) on creating a parallax scroll animation, successive frames of such an animation will show depth if viewed as a stereo pair. This will be most effective if the incremental movement of each layer is relatively small. Use the same concept of layered space to paint stereo pairs. The further back in space you want a layer to lie, the greater the left/right separation should be. If you followed the planet-rotation technique in "Around the World in 80 Frames" (Oct. '91, p. 39), successive frames of those animations can also yield effective stereo pairs. To try a variation, create a large rectangle of texture as a brush. Place it on a two-frame animation, shifting it horizontally for the second frame. Cut an animbrush from within this area. Clear the animation and create a solid circle on both frames. Set Fill mode to Wrap and fill each circle with successive cels from the animbrush. As a left and right stereo pair, this has interesting dimension—not really a sphere, but more like a blunt cone. If you get the hang of these few experiments, endless ideas will undoubtedly come to you.

Interleaved stereo animations can be created using DPaint IV's Move requester with the left and right stencils discussed earlier. For instance, to make a ball move away on the z-axis, load the left stencil and place the ball brush on frame 1 of an animation. In the Move requester, enter a negative x distance and a positive z distance, and then select Draw. When finished, load the right stencil, superimpose the ball with itself on frame 1, enter a positive x value and an unchanged z value in the Move requester, and then select Draw. Run ON3D and play the animation. The ball will recede in stereo space as well as shrinking on the z-axis. Combine this with a stereo landscape background for an impressive 3-D demonstration.

Composite Functions

One way to create a 24-bit high-resolution stereo image is to generate and save the 24-bit pair as Left24 and Right24, and then use the Composite features of ASDG's Art Department Professional to merge the pair as an interleaved stereo image. First create and save a DPaint image of black and white lines to be used as a mask. In ADPro Comp mode, load the Left24 image, and then load the mask with RGB transparency levels set to 0,0,0. The Left24 landscape now has alternate white lines. Save it, and then load the Right24 image selecting No Comp. Next, reload the Left24 with the alternate white lines. In the Composite interface, set RGB levels to 255,255,255 and select OK. This makes the white of the incoming image transparent, resulting in a composite of the pair as an interleaved stereo image.

Using ON3D, you can view this image with DCTV (Digital Creations) or OpalVision on an interlaced monitor. If you use Imagemaster (Black Belt Systems), it has an X-Specs separation feature under Geometric Transformations in the Process panel that splits the odd and even lines of an image into two clips. Two other X-Specs function buttons allow you to convert over-under format images to interleaved, and vice-versa.

I have concentrated in this article on painting and landscape-generation techniques because there is little documentation on stereo applications in these media. Many other software packages also support X-Specs and stereo imaging, including Imagine 2.0 (Impulse), Caligari (Octree), Pixel 3D (Axiom), Turbo Silver SV (Impulse), 3D Professional (Progressive Peripherals), and Page Render 3D (discontinued). Consult those manuals for hints and effective settings. A couple of object modelers, Animatrix (Dubois Animation) and VisionModeller 3D (ShaderSoft), even let you work with a real-time X-Specs stereo display. The Animatrix interface is shown in Figure 5.

Any stereo graphics and animation you view with X-Specs can be recorded to a VCR and then viewed with ***Haitex's* X-Specs TV** system ($169.95). This unit plugs into your VCR instead of your computer for viewing 3-D videotapes. The unit is so small you could easily pack it and the LCD glasses in the space taken up by a couple of VHS tapes. For more ideas on inexpensive ways to view stereo images, turn to this month's "Accent on Graphics" (p.48). ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.

The PC Connection



Everything you need to know about PC bridgeboards (with eight board-to-board comparisons)—no matter which model Amiga you own or what kind of PC you want to emulate.

Big Blue? Big Business? Big Brother? You all know the epithets that come to some people's minds when that computer monolith is mentioned. But say what you might about the PC and its compatibles, it is the *de facto* standard in the computing world today, outnumbering Amigas by several orders of magnitude. You may not be able to avoid PCs at work, so sometimes you might need to run software like Word for Windows or Excel at home. Or, it's even possible that, like me, you find some PC software as indispensable as your Amiga itself.

In either case, you have two choices: Buy two computers—and end up with two monitors, two sets of peripherals, and an office that looks like a computer store—or add an emulator to your Amiga that allows you to share data and lots of precious hardware between two ordinarily incompatible systems.

Blue . . . And You

There really are a lot of reasons to use a PC these days, not the least of which is Microsoft Windows 3.1. Windows isn't perfect, though it is a fairly slick operating environment . . . in some ways, better than Workbench. Windows' on-line hypertext help, for instance, is first rate. While I wouldn't recommend Windows over Workbench, I've found a need for both.

Just as there's an Amiga to fit virtually every need, PC emulators ("bridgeboards") are plentiful and various enough to suit just about everybody. As you can see from Table 1, they come in a wide variety of capabilities and ►

By Dave Johnson

ILLUSTRATED BY WARREN GEBERT

Table 1:

Emulators at a Glance

MODEL	Golden Gate 486SLC	Golden Gate 386SX	EMC486 SLC	A2386SX Bridgeboard	A2286 Bridgeboard	A500 PC/286
Manufacturer	*Vortex*	*Vortex*	*EMC*	*Commodore*	*Commodore*	*GVP*
Host Amiga	A 2/3/4000	A 2/3/4000	A 2/3/4000	A 2/3/4000	A2/3/4000	A 500 + GVP drive
Price	$919.99	$539.99	$1100	$649	Discontinued*	$99
Processor	Cyrix 486SLC-25	AMD 386SX-25	Cyrix 486SLC-33	Intel 386SX-20	80286-8	80286-16
Benchmarks:						
Sysinfo	45.9	23.0	101.0	23.0	7.7	15.3
MIPS	4.55	2.97	7.5	2.42	.96	1.68
Norton SI	33.4–36.1	12.0	54.0-62.0	11.1	4.3	
Real-world Speed:						
Links386	1:03	1:13	:36			
HJWin	:46	:50	:26	1:40		
Print	2:00	2:15	1:15	8:00		
Installation	Easy	Easy	Difficult	Difficult	Easy	Moderate
Pluses	MonitorMaster SIMMs IDE Controller	MonitorMaster SIMMs IDE Controller	Very fast			
Minuses	Win. Disk bug FDC optional	Win. Disk bug FDC optional	No serial port Janus drives	No serial port Janus drives	No serial port Janus drives Can't use DF0:	
Janus Compatible?	Yes	Yes	Yes	Yes	Yes	No
DOS in Amiga Partition?	Yes	Yes	No	No	No	Yes
Exchange Amiga and DOS Data?	Yes	Yes	Yes	Yes	Yes	Yes
Memory	16MB**	16MB**	8MB	8MB	ISA RAM card required	512K + Amiga RAM
Video Modes	ISA card CGA Olivetti Hercules EGA/VGA	ISA card CGA Olivetti Hercules EGA/VGA	ISA card MDA CGA	ISA card MDA CGA	ISA card MDA CGA	CGA Olivetti Hercules EGA/VGA
Emulator Type	Mouse, Serial, Parallel	Mouse, Serial, Parallel	Mouse, Parallel	Mouse, Parallel	Mouse, Parallel	Mouse, Serial, Parallel
Overall Rating	1	3	2	4	7	5

**Still available through some retail outlets; prices vary. **Amiga can use 4MB of emulator RAM or emulator can use half of Amiga's RAM.*

ATonce Plus	Power PC Board
Vortex	*Supra*
A 500/2000	A 500 A 2/3/4000 with adapter
Discontinued*	$349.95
80286-16	NEC V30-11
15.3 1.79	4.4 .63
Difficult	Easy
Leaves slots open	Provides up to 1MB for Amiga
Installation voids Amiga warranty	Doesn't multitask No support for ISA slots in A2/3/4000
No	No
Yes	Yes
Yes	No
640K + Amiga RAM	1MB + Amiga RAM
CGA Olivetti Hercules EGA/VGA	MGA VGA
Mouse, Serial, Parallel	Mouse, Serial, Parallel, Joystick
6	8

prices, and, somewhat surprisingly, they all work pretty well; there are no dogs here. As a rule, I wouldn't recommend buying anything less than a 386SX, though your needs may be limited enough to justify one of the slower emulators. Remember that the 8088 was the guts of the original IBM PC, a technology that is easily ten years old. The 286 offers about a ten-fold increase in performance, but it, too, is getting old. A lot of new software will run on a 286 only begrudgingly, or not at all. Of course, a card like the Commodore A2286 is perfectly adequate for running old standards like Wordstar.

If you do step up to one of the new, fast emulators, I think you'll find that a 386SX running Windows can even be an enjoyable experience. Even though Intel plans to roll out its 100 MIPS, 64-bit wide Pentium chip sometime next year, a 386 or 486 emulator should be able to serve you comfortably for years to come. So, for those of you in the market for a PC emulator, we'll examine eight different models to choose from. But, first, let's take a look at some Amiga-PC basics. (*For information on contacting the developer of any product covered in this article, see the "Manufacturers'/Distributors' Addresses" list on p. 102.*)

Input/Output

All emulators have to let you get data in and out. Most bridgeboards let you use the Amiga's floppy drives as PC drives—low-density ones, of course. In order to read 1.44MB, high-density floppies, you must own an Amiga with such a drive (like some A3000s and the new A4000). An A2000 or A4000 can actually support both 3.5" and 5.25" drives internally for the ultimate in convenience, but if you have a high-density 3.5" drive, it is pretty easy to get by without its floppier cousin.

As for hard disks, most emulators force you to use the Amiga drive, one way or another, as the PC's storage medium. The exceptions are Zorro-slot Amiga emulators, which accept PC hard disks in the ISA expansion slots. The Vortex Golden Gate emulators also have an IDE interface right on the board. Otherwise, there are two ways of adding a PC hard disk to your Amiga: through a single file or via an entire partition.

If you chose the file method, the emulator creates a large file on the Amiga's hard disk, and your new PC believes for all the world that the file is an entire drive. This system lends itself to archives with your normal Amiga back-up software, as AmigaDOS treats the DOS drive like any other file. The major downside of this system is its lack of speed. Because the PC must jump through AmigaDOS hoops to access its data, this arrangement can be much slower than the partition method.

Commodore's hard-disk access scheme uses a software library called Janus. Janus drives, like all other file-based schemes, require the AmigaDOS Addbuffers command (and a suitable investment of Amiga RAM) to operate at acceptable speeds. Commodore recommends 50 buffers or so for every megabyte of hard-disk space, so a 50MB DOS drive will consume about 1.5MB of fast RAM. On the other hand, Janus drives can grow in size as you write data to them, like a RAM disk, for additional flexibility.

The partition method requires you to have an empty Amiga partition on your hard disk, which you format in MS-DOS. The Amiga considers it a valid, empty partition, but your PC accesses it like a DOS drive at ordinary hard-disk access speeds. Many emulators allow you to use either the file or partition method ►

with the notable exception of the Commodore boards, which use only the file method or an independent DOS drive. I'd recommend sticking with partitions for their speed and portability. If, for instance, you use the partition method on an industry-standard Syquest cartridge, you can use that same DOS drive if you upgrade from, say, the GVP PC/286 to a Vortex 486SLC later. You can even use it directly on a real PC.

THE A500 GANG

Supra's **Power PC Board** ($349.95) anchors the low end of the PC market with an 8088 emulator. While my initial instinct was that this would prove to be little more than an historical curiosity, Supra surprised me with a flexible version of the PC that got it all going. It is a good choice for the budget-minded Amiga 500 user who hasn't yet added memory to the trapdoor of his machine—it is both an emulator and memory-expansion card in one.

If, on the other hand, you have a more sophisticated Amiga 500 configuration that includes a GVP hard disk or accelerator, there's room in the chassis for ***GVP's*** **PC/286** board ($99). Installation of this emulator, which requires you to open up the GVP hard-disk case, is straightforward for anyone who feels reasonably comfortable with a screwdriver. Be forewarned: GVP isn't kidding when it tells you to watch out for the fan and LED cables that tether the two halves of the case together. Open the case gingerly lest you pull the cables out of their sockets before you see which way to plug them back in.

Only the ***Vortex*** **ATonce-Plus** (now discontinued)—also a a 286 emulator— is tricky to install, as you have to open the A500, remove the 68000, and wedge the emulator in its place. It is easy enough to do, but only for those who don't feel squeamish at the thought of plugging in a modem.

Both in terms of speed and functionality, the two 286 offerings are so similar that the decision to buy one or the other should be largely a function of your own system configuration. The primary reason to buy the Power PC, however, is the additional memory it provides, as it has little to offer that you can't get in a shareware software-only emulator.

Table 2: Clash of the Titans

	HJWin	Links386
VORTEX 486:		
As shipped	:46	1:03
With cache optimized	:32	:42
EMC 486:		
Using Addbuffers	:26	:36
Second time using Addbuffers	:18	:18
No Addbuffers	4:07	2:27

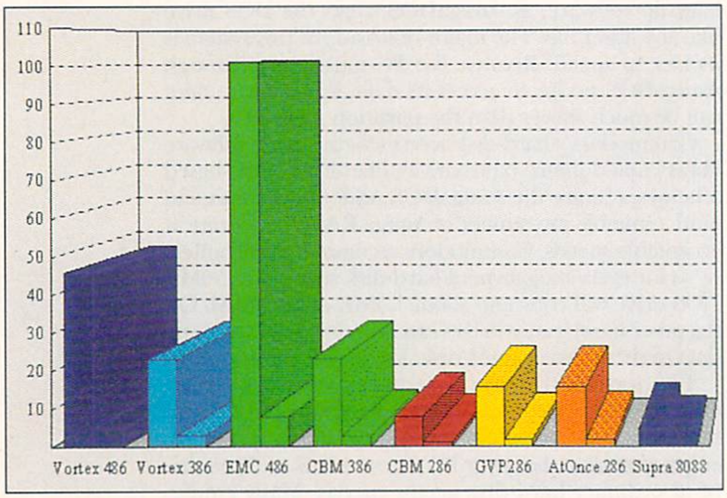


Table 3: Sysinfo and MIPS Ratings

THE COMMODORE EMULATORS

Ironically, of all the emulators discussed here, the one with the most complicated installation was made by the very company that makes both Amigas and PC clones. ***Commodore's*** **A2386SX** ($649) is daunting to configure due to the dizzying array of options, limitations, cables, and jumpers. The A2386, for instance, was the only emulator that required physically recabling df0: in order to share the drive between the PC and Amiga. Further, I had to read through the manual with a highlighting pen in hand so I could get a good feel for what I had to do. This confusion was compounded by having two almost identical, and therefore redundant, manuals, plus a few vague instructional statements that required a vibrant imagination to properly interpret.

In order to use the Amiga mouse under Windows 3.1, for instance, the manual illogically referred me to the Microsoft Windows' manual for installation instructions. After much frustration, I decided, on a longshot, to rename the Commodore-supplied mouse driver as the Microsoft mouse driver: Unexpectedly, it worked!

I applaud Commodore for having the only emulator to do the obvious. The A2386 doesn't wait for you to run an emulation program to start; it boots at the same time as the Amiga—as soon as you turn it on. This is a real advantage for people who have inordinately lengthy AUTOEXEC.BAT files. Still, Commodore's A2386 is a mixed bag. It is unnecessarily complicated to set up, though once you're past that, it works great. On the other hand, it does not let you use the Amiga's serial port. And while there is an input on the card for a monitor switch, like Vortex's Golden Gate emulators do for that company's MonitorMaster, the Commodore device currently does not exist.

Commodore's **A2286** (now discontinued) does not present nearly as many problems—but, then again, it offers only the older 286 emulation capability.

THE BIG GUNS

Elite MicroComputers has taken Commodore's 386 board and transformed it into a fast 33 MHz 486SLC—the **EMC 486SLC** ($1100). Essentially identical to the Commodore board from which it is rebuilt, the EMC has all of the prior's strengths and weaknesses, but it is the fastest board on the block. EMC sells an I/O board that complements its emulator quite well. It has two serial ports and a parallel port, game port, and SVGA output all in one package. The video ships with 512KB, upgradable all the way to a 32,000-color display. The EMC is so good, it was a tough call for picking a best board . . . the EMC or the Vortex Golden Gate. Speed isn't everything, though. The ►

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• ADPro placed third among ALL Amiga® software products on the MicroPace 1992 Top 50 Sellers List.

• The Post Group, one of the largest post production houses in the world, has used ADPro and MorphPlus in the production of special effects for the prime time TV show Quantum Leap and for major motion pictures.

• Mark Swain, an AmigaWorld reviewer (and animator for Foundation Imaging, the creators of the special effects for Babylon 5), said, "MorphPlus produces the most realistic shape shifting special effects I have ever seen on a desktop."

• David Duberman, Executive Editor of Video Toaster User, said in a comparative review of Amiga® morphing products, "MorphPlus is the Rolls Royce of Amiga® morphing software... it will pay for itself with one job."

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The Essential PC Emulator

WHETHER YOU'RE a PC novice or even if you've been around the block a few times with Blue, you still will probably feel something of a "Stranger in a Strange Land" when it comes to operating in the MS-DOS world. Having just put an emulator in your Amiga, you're probably wondering where you should go from here. What is the best, most productive software and hardware to complement your new, dual-DOS computer? Consider these ten items as a roadmap to your future productivity.

SOFTWARE

1. MS-DOS You need DOS. That may sound obvious enough, but you can't get by on Windows alone; Windows 3.1 doesn't replace DOS, it is an operating environment that runs on top of it. Just about any DOS version will do, but if your emulator did not come with a bootable version of MS-DOS, you should pick up **MS-DOS 5.0** ($99.95, ***Microsoft***) for its new features such as 2.88MB floppy disks and a graphical "shell." By the way, remember that the vast majority of DOS packages sold in stores are not bootable, but rather upgrade packages. You may have to special order it.

2. Windows If you want to make your PC look as similar to the Amiga as possible, buy **Windows 3.1** ($149.95, ***Microsoft***). It is many orders of magnitude better than Windows 3.0, so if that is all you've seen, don't worry: Version 3.1 is quite nice. As a matter of fact, you won't have many reasons to enter DOS at all with Windows, as the quantity of quality Windows applications is growing astronomically. Look at it this way: There are almost as many copies of Windows sold every month as there are Amigas in the entire world.

3. Image Manipulation If you're looking for a piece of software that can convert among the myriad of PC image-file formats (and Amiga too), look no further than **Hijak for Windows** ($249, ***Inset Systems***), a one-stop shopping trip for file conversion. Though it handles dozens of formats, it doesn't yet deal with Amiga HAM. On the Amiga side, **Imagemaster** ($249.95, ***Black Belt***) handles a very wide variety of file formats, including DOS standards. The freeware file viewer ViewTek (Thomas Krehbiel) displays the popular GIF format in HAM8 without prior conversion, and it thus has a permanent place on my Workbench screen.

4. Word Processing There are quite a number word processing options available on the PC, and I'm afraid to say that many of them are a lot better than what we have to choose from here on the Amiga. **AmiPro for Windows** ($495, ***Lotus Development***) and **Word for Windows** ($495, ***Microsoft***) are two excellent choices. Both have every feature found in ProWrite, Final Copy, and excellence! combined, plus the ability to effortlessly create a wide array of tables and graphs and handle math equations.

5. Personal Organizer While you're spending so much time in PC land, why not take advantage of what the PC does best? A program such as **Lotus Organizer** ($149, ***Lotus Development***) provides an easy-to-use calendar, to-do list, anniversary tracker, long-term planner, and more. Entries can be linked to each other and reminders pop right up on the desktop.

HARDWARE

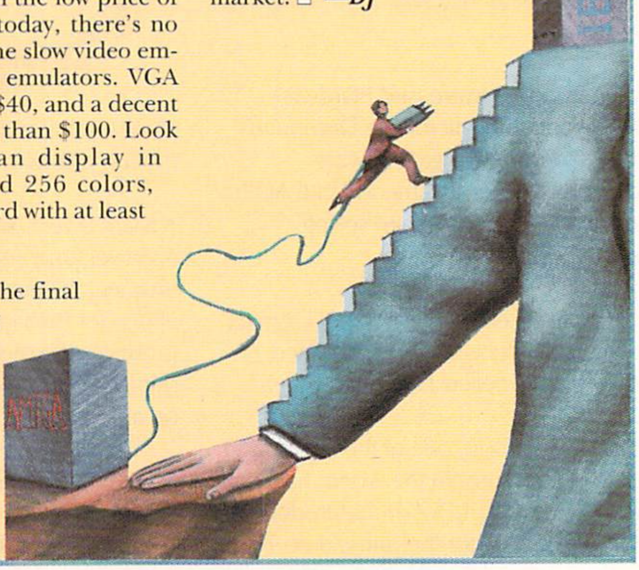
6. Video Card With the low price of video display cards today, there's no reason to settle for the slow video emulation provided by emulators. VGA cards run as little as $40, and a decent SVGA card costs less than $100. Look for a card that can display in 800×600 pixels and 256 colors, which requires a board with at least 1MB of RAM.

7. Sound Board The final touch for PC-atizing your Amiga is to add the **SoundBlaster Deluxe** ($129.95, ***Creative Labs***) sound board or a SoundBlaster-compatible which similarly provides emulation of AdLib and other cards, as well as a joystick port. One option is ***Sigma Designs'*** **WinStorm board** ($429) which provides 24-bit SVGA color, 16-bit SoundBlaster-compatible sound, a SCSI port, and joystick input.

8. Serial Port Most emulators include access to the Amiga's serial port, but if you plan to run IBM's OS/2, it seems picky about seeing a real serial port. ***Elite MicroComputers*** (EMC) sells a **multi I/O card** ($200) for its 486SLC that contains two serial ports in addition to lots of other goodies, including SVGA video.

9. More Hard-Disk Space The presence of a PC in your system will undoubtedly put an even bigger squeeze on your already cramped hard disk. A Syquest drive gives you unlimited storage space, and a unique advantage unavailable elsewhere. I maintain several 88MB cartridges from which I can boot; each one is configured differently for DOS, Windows, and game sessions.

10. Joystick It is well known in the gaming community that analog joysticks for the PC market are much preferred to the Amiga's digital sticks, particularly for tasks like flight simulators. If you add a PC joystick to your line-up, it can also be used on the Amiga via one of several adapters now on the market. □ ***—DJ***



MacroSystemUS PRESENTS

RETINA



Retina™ - 24Bit Frame Buffer and Workbench Emulation

Output: DB-15 VGA Connector - Analog RGB output Supports 15 - 75KHz Hor. Freq. and 50 - 95 Vert. Freq.

800x600 full 24Bit 16.7 Million color Display Non-Interlaced. Allows multiple 8, 16, and 24Bit Resolutions.

Full Workbench Emulation with resolutions such as 1024x768 or 1280x1024 in 16 colors or even more! Up to 2400x1200! Compatible with Amiga 1950,1960 and VGA and up monitors.

Ram Configurations 2 Megabytes or 4 Megabytes. 4MB allows double buffering for animations.

Compatible with the A2000, A3000, and A4000 series Amigas. Installs into any 100 pin Amiga slot does not use the video slot. Compatible with the Video Toaster and OpalVision.

XIPaint is a real-time 24Bit paint program that comes with the Retina.

The Retina can still be used to display 24Bit graphics while emulating Workbench at a maximum resolution of 1280x1024 non-interlaced and you could have AdPro running on it's own screen at 320x200.

You can change the output resolution for any program simply by choosing the program name and then selecting a different screen resolution for that program.

Compatible with programs such as AdPro, Morph Plus, MultiFrame, TVPaint, ImageFX, ProPage, ProWrite, PageStream, DynaCadd, Imagine 2.0 to name a few.

The Retina requires the 2.0 or greater operating system.

VLab



VLab™ - RealTime Video Digitizer

Digitizes a full frame in 1/30th of a second or 1 field in 1/60th of a second. Digitizes in full Broadcast NTSC or PAL.

Will save images as 24Bit, YUV, or any Amiga format including AGA modes like Ham8.

The VLab™ has 2 Composite Video inputs.

The VLab will work in the A2000, A3000 and the A4000 series Amiga Computers and does not use the video slot.

There is also a VLab1200 that allows owners of the A1200, A500, A600 to also use the VLab.

The VLab does not require a frame accurate video player to hold the image still to digitize.

The Vlab will in real-time digitize any frame from the video source that you have connected.

You can digitize images from cable TV, Broadcast TV, VCR, Video Disk Players, and Video Cameras.

The VLab is supported by popular Graphics software such as ASDG's Art Department Professional, TVPaint by TechSoft, MultiFrame by MacroSystemUS.

There is a special monitor window that allows you to see the video signal that you have attached to the VLab in a window on the VLab screen in up to 16 gray scales.

The VLab software requires the 2.0 operating system or higher and is fully ARexx compatible.

The VLab is compatible with the Video Toaster, OpalVision, Retina™, and Harlequin.

The VLab is also supported by the Nucleas Personal SFC.

MultiFrame *for AdPro*

MultiFrame is a front end for the Art Department Professional and Morph Plus that allows you much greater control over multiple-frame processing. You can manipulate single or multiple images over time creating special effects with just a few mouse clicks. The perfect tool for creating effects with a large number of images for output to video.

MultiFrame Features:

-Process images over time - most processes can be manipulated with a starting value and an ending value with the separation being the number of frames that you choose to make. Generates all frames automatically for you.

-Non-linear motion interpolation using true splines with adjustable knots, tension, continuity and bias. Full spline-controlled variables.

-Perform ADO-style fly-ins of moving images easily using MORPHPLUS perspective operator.

-Create a morph from a flat to a sphere using SPHERE with EFFECT start and end values of 0 and 100 respectively.

-Multiple frame/Multiple Ripples, allowing ripples that start at different times that accelerate/decelerate over time and can move.

-Use the compositor to rotoscope images using foreground images, background images and alpha for matting images over others.

-Automatic compositing of images over backgrounds using true alpha-channel/holecutter/key effects.

-Use a black & white animation as a wipe-pattern, transition between a background sequence and a foreground sequence using the B&W frames as an alpha sequence in compositor.

-Create panning/tilting camera effects on still images or sequences. Movable skew/tiling effects with panning/tilting camera moves.

-Auto triggering of 4 GPI (General Purpose Interface, optional) functions for recording/control of devices such as Digital Disk Recorders from SONY and ABEKAS.

-Complex operator/processes (sphere, perspective, etc...) now allow loading and saving of all parameters for easy recall.-Automatic conversion of any supported image format to any other format (including ANIM-5/ANIM-8 and Toaster FRAMESTORE) during processing.

MacroSystemUS

Mt.Clemens, MI 48038 (313) 263-0095 Phone (313) 263-9639 Fax

Circle 157 on Reader Service card.

EMC would have certainly won if it were not for the clunky Janus drive system, lack of on-board serial-port support, and the absence of the monitor switch (blame Commodore on all counts, not EMC).

Both of the high-end ***Vortex*** cards—the **Golden Gate 386SX** ($539.99) and the **Golden Gate 486SLC** ($919.99)—are built around the same Vortex bus and probably offer the most versatility of all the emulators. They have a lot of nice little touches, like the use of industry-standard SIMMs, very flexible memory options, MonitorMaster (a software controlled monitor switch for viewing VGA and Amiga on the same display), the ability to use Janus drives you might have set up with an older Commodore bridgeboard, and more. Unfortunately, the emulator software currently has a nasty bug that prevents some floppy-disk functions, such as Norton Backup, from working properly in Windows 3.1. On the whole, though, either board is quite a buy.

Vortex and EMC have both taken a fair bit of heat over their decisions to build emulators around the 486SLC chip, a souped-up 16-bit 386 CPU that uses the 486SX instruction set. When you get right down to it, the extra performance a 486SX or DX might offer would likely be small compared to the additional cost when you consider the bottleneck is at the 8 MHz video card. As it stands, though, both of these boards perform better than a 33 MHz Compaq 386.

The Real World speed test in Table 1 pits the 386 and 486 boards against each other in a few representative tasks: drawing the first hole in Links386, rendering a GIF in Hijak for Windows, and printing the first page of this article in AmiPro for Windows. No matter how you stack it, the EMC board comes out on top, though a glance at Table 2 will show that there's more here than meets the eye.

The Vortex board surprisingly ships without its cache optimized. All the Golden Gate test results in Table 1 are based on the stock board, but I ran across a cache utility that pushed more speed out of the card—over a MIPS faster, in fact. Table 2 shows some "before-and-after" numbers for the optimized 486. If you use such a utility, you can close some of the speed gap between these two boards.

The EMC board, for its part, uses the Janus hard-drive system, so it is slower than a hypothetically identical emulator that might use the partition method. Also, you can see that a Janus drive without any Addbuffers is prohibitively slow. Table 2 further demonstrates how much potential the EMC board has, but loses, due to the Janus drive. I performed the same operation twice—presuming that the second time would be directly from the cache created by AmigaDOS's Addbuffers command, and therefore a better test of just how fast the board really is.

By the way, the benchmarks in Tables 1 and 3 shouldn't be taken as absolute values. Like all benchmarks, they are only valid for comparisons between similar systems. Also, you could get different values using different benchmarking utilities.

Emulating On A Budget

Of course, you might not be desperate enough for PC emulation to run out and buy one of these expensive contraptions. You may, however, want to occasionally copy DOS files, run a PC word processor, or view disks full of GIF graphics. Well, there's help for you, too. To simply copy DOS disks (low density, unless you have a high-density Amiga drive), all you need is CrossDOS. CrossDOS is part of AmigaDOS 2.1 and higher, although you can also buy the latest version, **CrossDOS 5.0** ($59.95), separately from ***Consultron***. It is a simple utility that puts DOS disks on the Workbench for formatting and file transfer. Even if you get an emulator that has its own Amiga-to-DOS file transfer program, I would recommend using CrossDOS anyway. It's simply the best program of its kind around. As if the deal needed sweetening, the stand-alone, non-Workbench-2.1 CrossDOS 5.0 package includes CrossPC, a simple but very useful XT emulator.

Shareware alternatives to PC computing include programs like IBeM and PC-Task. These are available on most BBSs, including major services like GEnie. While they offer little in the way of features, you can run traditional PC software on them. They all provide IBM-XT emulation in CGA and run at about the speed of an actual XT (or faster if you are using an accelerated Amiga). Combined with CrossDOS, one of these utilities might suit your needs.

The bottom line for a lot of people is whether to buy an emulator or just get a real PC compatible; in many cases the cost weighs in favor of the real McCoy. The Amiga market, though, now offers a good crop of emulators, particularly for the Zorro-slot machines, and they can do everything a real PC can do, including CD-ROMs, networks, and Windows. In either case, once you've made up your mind, I'll see you at the A: prompt! ■

The Mac Gap

WHEN IT COMES to emulating other operating systems on the Amiga, it turns out that the IBM PC compatible isn't the only game in town. ***ReadySoft*** has been making the Macintosh's happy face a familiar sight on Amigas everywhere for a few years now, and the latest incarnation of its product, **A-Max II Plus** ($499.95), provides seamless Mac emulation in the form of a card for Zorro-slot Amigas. A-Max runs monochrome Macintosh software as if the Amiga were a Mac SE or Classic, at least as fast as the original Macintosh could.

A-Max lets you use the Amiga's parallel and serial ports as Mac peripherals, and with the advent of the II Plus, Amiga drives can read and write Mac disks. The only catch is that you have to provide your own Mac ROMs, and the price of those hunks of silicon varies depending on how tightly Apple is controlling them at the moment.

One thing A-Max can't do is run software in Mac II or high-color modes. A new product that promises to fix that is **Emplant** ($279.95, ***Utilities Unlimited***), a multi-OS emulator that can run up to four different operating systems from the same card. Although Emplant has been selling for about six months, it has had the sort of spotty history indicative of a complicated hardware product that wasn't quite ready to ship. It promises to be a very impressive product, however: 256-color displays using AGA chips, a SCSI interface, a PCMCIA version for the A1200, and more. (*Editor's Note: **AmigaWorld** will review Emplant next month in the August issue.*) □ ***—DJ***

*Dave Johnson authored the book **The Desktop Studio: Multimedia with the Amiga**, and he is a frequent contributor to Amiga and other computer publications. Write to him c/o **AmigaWorld**, Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

PUT ON THE HEX

*While computer viruses may be a part of life, the fear they inspire doesn't have to be a part of **your** life. Arm yourself with the protective powers invoked here by the US representative of Safe Hex International.*

By Jim Maciorowski



"Double, double toil and trouble; Fire, burn, and cauldron, bubble."

SO SAID THE witches in *Macbeth* as they pretended to safeguard that would-be king of Scotland. But don't think that you have to resort to spells or voodoo to protect your Amiga from the pernicious effects of the growing number of computer viruses. There are practical steps you can take to prevent almost all those viral threats from infecting your Amiga.

Let's start by examining some basic types of viruses and how they go about infecting your system. Then we'll look at some general measures and good computing practices that can help you avoid viruses before they strike. Finally, we'll survey some of the newer, more potent virus-protection programs.

Remember, viral threats can come from almost anywhere — public-domain software, pirated (illegally distributed) versions of programs, and even factory-sealed commercial packages. In other words, no computer user is safe from viruses. (*In-*

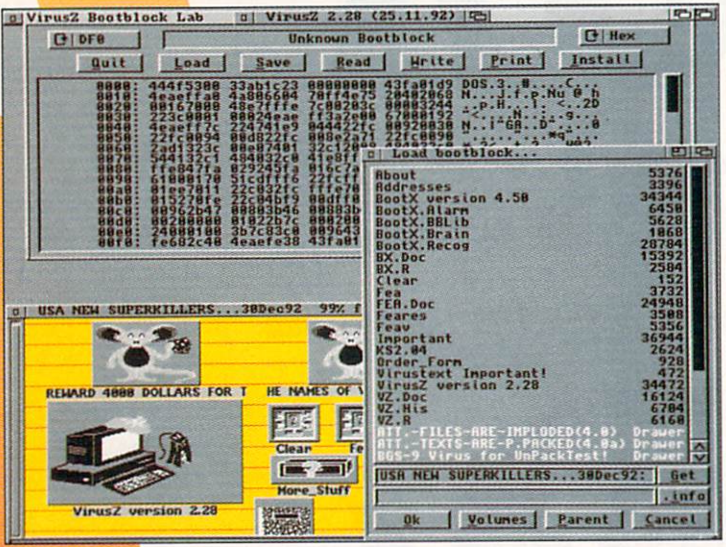
ILLUSTRATED BY RICHARD DOWNS

formation about contacting developers of virus-protection programs—marked in bold where mentioned in the text—can be found in the "Contacts" box at the end of the article, along with other useful sources of information and software.)

Know Thine Enemy

A virus is a sequence of commands (written as part of a program or as a program itself) that runs when a certain criterion is met, such as a certain day of the week or when you turn on your computer for the first time. There are several different types of viruses and you should be concerned about each, especially if you enjoy downloading from bulletin board systems (BBSs).

Of all the known viruses, *bootblock viruses* are the most common form. As the name suggests, these viruses reside on bootblocks of both floppy and hard disks (track 0, sectors 0 and 1). Representatives of this strain vary from those that temporarily make your fast RAM inactive to ones that corrupt tracks 39 through 79, rendering the disk completely useless. These viruses are spread by disk-copying programs of almost any kind.



VirusZ can even check archived files for viruses.

Don't confuse virus bootblocks with *custom bootblocks*. The latter are special bootblocks, typically of a non-standard DOS, which are required to be on the disk for the disk to load. Games are perhaps the largest contributor of these special bootblocks. Fortunately, the virus killers of today will usually recognize which bootblocks are custom-made and which ones are viruses.

The first bootblock virus was reported in 1987 and was called the SCA (Swiss Cracker's Association) virus. It simply hides in your memory's CoolCapture until you reboot. These are generally the easiest viruses to detect. Often, using the INSTALL command from your Workbench disk will solve the problem of infected bootblocks. Or you can install an anti-virus bootblock through killers like BootX and Find 'Em All. Be completely sure that the bootblock you are installing is a virus: If you remove a custom bootblock, you may wind up trashing a disk! And be cautious: If you are going to start installing bootblocks, make backups first!

File viruses are not as common as bootblock viruses, but they can do as much, if not more, damage. These viruses (sometimes called "Trojan Horses") are activated once you specify an executable file to run. A harmless execute.me file could display an advertisement for a BBS while formatting your hard drive as a background task. These viruses are usually found as bogus versions of existing programs (sometimes even as phoney versions of virus killers!). BootX 5.02 and any release of VirusX after version 4.01 (the last official release) are examples of bogus releases and should not be used. If you call bulletin boards on a regular basis, be cautious before downloading a new version of a program unless you know for certain that it came from a reliable source.

File viruses often operate in certain ways that, if you recognize their behavior, you can defeat them with a little detective work. Say a particular virus is wreaking havoc with your screen dispaly. Where should you start looking? Well, viruses almost always infect the first c: command in your startup-sequence. Like most file viruses, this virus places the c: command in your devs: directory as a nameless file and infects the one in your c: directory.

First, find the infected command. Look for it in your c: directory (or wherever it was) and delete that file. Then load a disk utility that lets you view invisible files. (I prefer INOVAtronics' Directory Opus but any one will do, including Progressive Peripherals' DiskMaster or the freely distributable SID—Timm Martin, Fred Fish #651.) Look for the invisible file in your devs: directory and rename it to its original name. Finally, move it back to the c: directory (or wherever it was). Many virus killers will think your disk is infected if you don't rename this nameless file, so be sure to do it.

Link viruses are extremely nasty and should not be disregarded. These viruses attach themselves to files and start infecting other files once they are executed. They can corrupt an entire hard disk in seconds. Fortunately, the virus killers of today can scan programs for suspicious programming code. Often if a program

Virus Rx: Safe Hex

I HAVE MENTIONED Safe Hex International (SHI) several times in this article, and with good reason: This nonprofit organization is the leader in Amiga virus protection, sponsoring more than 20 "Regional Virus Centers" worldwide with phone support. SHI is currently working on programming projects to "innoculate" as many Amiga computers as possible in the shortest amount of time. Some of the activities under way include:

- A universal Amiga BBS virus checker.
- Standard updated virus libraries to be accessed by new virus killers. This gives programmers more time to work on new features for their programs, rather than rewrite their programs each time a virus is discovered.
- Having virus "help disks" shipped with every new Amiga computer, as is the case in Scandinavia. (Are you reading this, CBM of America?)
- SHI's anti-virus disk, "The New Superkillers," contains almost every virus killer mentioned in this article, and it is available for a $5 donation ($7 overseas).
- SHI has also placed a reward (currently at $4000) for information leading to the arrest and conviction of virus programmers. Enticed? Be sure to write for more information (see the "Contacts" box for details on contacting Safe Hex).

—JM

has a link virus attached to it, the "new" program size will differ from the original program size.

A typical example is the Saddam Hussein virus. This is a multiheaded file and link virus (and there is also a bootblock virus of the same name). This virus always infects your L: directory, and it will create that directory if it is not there already. It attaches itself to your disk-validator with the same size and the same name. Once executed, it spreads throughout the disk and writes "IRAK" in the start of any file (executable, text, or otherwise), but it does not change the size of the file. What's worse is that you cannot delete the virus from a file editor or through the CLI. Advice? As former president Bush might have put it, "Read my lips: Use a current virus checker and make backups!"

Some people believe that there are also viruses that can attack your clock and make it do weird things like run backwards or run extremely fast. *Clock viruses*, however, are nonexistent, period. There is not enough memory in your clock for a virus to infect your clock and remain alive in it. If your clock is acting screwy, use the SETCLOCK command from your Workbench disk to fix the time. Usually this will solve the problem.

Prevention is the First Line of Defense

Having read what viruses can possibly do to your computer, you may be asking yourself what you can do to avoid them. A simple, cavalier answer would be: Don't buy a computer. There is no guarantee that you won't encounter a virus, even if you use the latest virus-killing programs. However, such programs do offer a very reliable measure of protection and a very acceptable rate of recovery if your system does become infected. While we will look at specific virus programs in the next section, there are some general measures everyone can practice to avoid viruses in the first place.

The easiest way to prevent virus infection and its spread is to always write-protect your disks. This is not a time-consuming task. All it takes is the flip of a notch on your 3.5" disks. (If you are using 5.25" disks, use black tape—not transparent tape—to cover the notch.) If you absolutely must have your floppy disks write-enabled, then shut your system down for 60 seconds before booting up with a new disk. This will completely drain your memory of any possible virus. A normal reset (Control-Amiga-Amiga) does *not* clear your memory! Viruses can hide in certain areas of your memory, and can infect write-enabled disks when you do a warm reset.

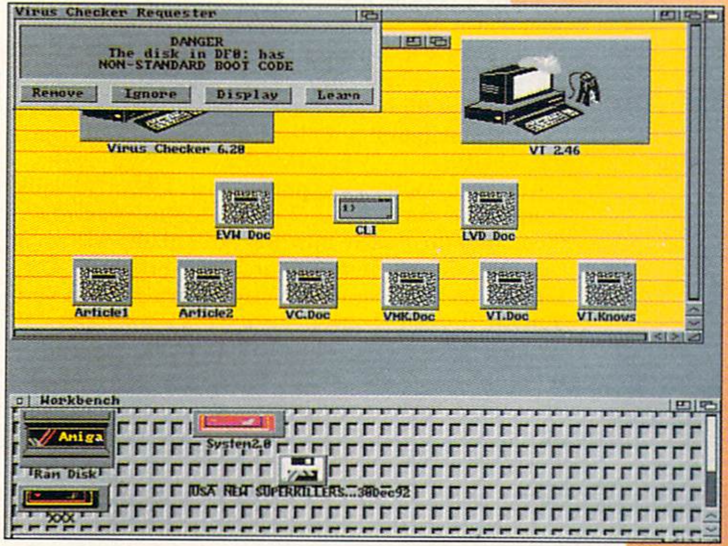
For even better protection, there is a hardware "virus warner" available from the Safe Hex International Regional Virus Center in England (see the "Contacts" box for details). This device will alert you to *all* virus writes, and it even has an automatic write-protect mode. It costs about $70 in American currency, but if you are dead paranoid about viruses, it could be well worth the investment.

Also, if you do a lot of telecommunications, be sure that the files you download are virus-free. Watch for any reports of viruses. In addition, a number of BBS sysops employ a feature that checks files for viruses before they are uploaded to their networks. (Every BBS should have this feature!)

If you have a hard drive, you should have a controller that disables access to it. With some controllers it is called a "game switch." Don't be fooled, though, it's really a "virus switch," and I congratulate every manufacturer of hard-drive controllers who includes one! (Controllers that don't can even be modified to include a toggle switch, which works just as well.)

Finally, keep in mind that even though many virus killers will detect infected disks and files in a moment's notice, you should not forget to make backups of all your important disks anyway. Virus killers will remove viruses, but if the viruses have "integrated" into your files, removing the viruses may pretty much trash the files as well.

One last item to consider under the heading of prevention is that not all problems are virus-related. You may suddenly encounter some strange behavior on your computer that seems to exhibit all the symptoms of a virus: However, if you have not exposed yourself to any new software recently, chances are you have a hardware problem. Check things like the chips on your 8520 circuit (often a prime cause of virus-like symptoms when they malfunction).



Virus Checker has a "learn mode" for recognizing new viruses.

Which Virus Killer Should You Use?

Although I have been asked that question many times, the choice is ultimately up to you. There are many killers out there that do basically the same thing, but there are features in one program that you may prefer over those of another. All I can do is give you some suggestions.

What you want to look for in a virus program are such features as memory checking, reporting unknown bootblocks, and scanning disks for file and like viruses. Following are descriptions of some proven virus programs; many of these are constantly being upgraded, so please be aware that version numbers of some of these programs may have changed by the time this article goes to press.

BootX 5.23a-1.74 by *Peter Stuer* is perhaps the best "Saddam" virus killer to date: It makes the virus passive and then restores the infected files—often to nearly 100% of what they were before infection. This program uses a separate brainfile (called "BootX.Recog," the "1.74" in its title) that is updated when new viruses are found. ►

BootX is also one of the first virus killers to utilitize the LOCALE feature of Workbench 2.1/3.0; in other words, it is one of the first killers that can be read in different languages! Of course, this version of BootX is for Workbench 2.x and up—the final release under Workbench 1.3 is BootX 4.50-1.68 (the ".Recog" files are no longer upwardly compatible).

VirusZ 3.0 by ***Georg Hoermann*** is one of my personal preferences. It is one of the first killers to check archived files (files ending in .LHA, .LZH, .DMS, and so on) by using a "decrunch.library." It's excellent for running in the background: It's small, fast, and doesn't have a lot of annoying requester windows.

Virus Checker 6.20 by ***John Veldthuis*** is another great killer choice to have running in the background. It is very easy to run and has a helpful "learn mode" for recognizing new viruses. First-time virus-killer users will find that this is an excellent program to use. Even the documentation is well-written, citing many examples of viruses and what they do.

There are other new, potent virus killers available around the world. While I can't go into detail about them, they do deserve mention: **VT** (a killer written in German), **Virus Interceptor** (for Workbench 2.x), **Link Virus Detector**, **Early Virus Warning**, and **Find 'Em All**. (Details about contacting their developers are contained also in the "Contacts" box.) Try as many of these as you can get; if your system has enough memory, don't hesitate to run two or three at the same time.

An excellent all-in-one virus package is **The New Superkillers** available from ***Safe Hex International***, which contains nearly all the virus programs mentioned in this article. (See the sidebar "Virus Rx: Safe Hex" for details.)

Almost all of these killers can be found on many BBSs. You can also find them on accredited Regional Virus Center BBSs, as well as on commercial networks such as BIX, CompuServe, GEnie, and Portal Communications. In dealing with network downloads, one good rule of thumb worth following is to *never* use a virus killer that is more than three months old; it will not find new viruses. Also keep in mind that these programs are either shareware or freeware. If you use shareware, send the authors some money to ensure that their programs will be regularly updated.

Virus protection is very simple and does not cost a lot of money. Just remember three things: 1) write protect your disks, 2) make backups, and 3) use one or more current virus checkers.

There was one virus in 1987. Today there are almost 300. At this growth rate, it is predicted there will be 1000 viruses by 1996. Be prepared! ■

Jim Maciorowski represents Safe Hex International in the US. He distributes "The New Superkillers" and other SHI-related disks. Contact him at PO Box 724, Port Richey, Florida 34673-0724 or at the Florida Regional Virus Center included in the "Contacts" box.

Contacts

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SAFE HEX REGIONAL VIRUS CENTER ENGLAND
(*for Hardware Virus Warner*):
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UK

BOOTX, EARLY VIRUS WARNING, LINK VIRUS DETECTOR
Peter Stuer
Kauwlei 21
B-2550 Kontich
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FIND 'EM ALL:
Koen Peetermans
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B-3891 Gingelom
Belgium

VIRUSZ
Georg Hoermann
Am Lahnewiesgraben 19
W-8100 Garmisch-Partenkirchen
Germany

VIRUS CHECKER
John Veldthuis
21 Ngatai Street
Manaia, Taranaki
New Zealand

VIRUS INTERCEPTOR
Johan Eliasson
Bäckgatan 6
60358 Norrköping
Sweden

VT
Heiner Schneegold
Am Steinert 8
8701 Eibelstadt
Germany

ACCREDITED REGIONAL VIRUS CENTER BBS'S (US)
Ground Zero BBS (Florida)
813/849-4034

Pioneer's BBS (Washington)
206/775-7983

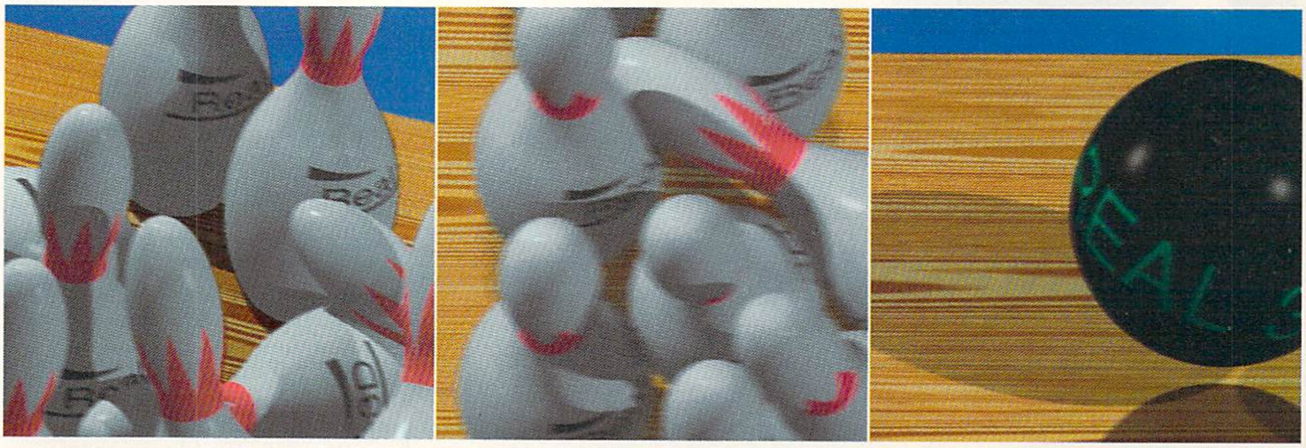
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Cambridge, MA 02138
800/227-2983
617/354-4137

CompuServe
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Columbus, OH 43220
614/457-0802
800/848-8199

GEnie
401 North Washington St.
Rockville, MD 20850
800/638-9636

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408/973-9111

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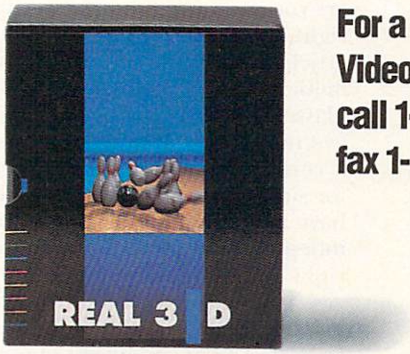


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ACCENT ON GRAPHICS

53

A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

Stereo Output And Viewing

IF YOU READ my article on creating stereo images for viewing with Haitex Resources' X-Specs ("1+1=3(D)!," p. 30) in this issue, you might wonder how you could share those images with others who don't own an Amiga or LCD (liquid-crystal display) glasses. In fact, there are many inexpensive ways you can create and view permanent stereo images. This column will explore a variety of techniques and equipment you might try for an additional hardware investment of as little as $1.95.

To help you in these efforts, you should check out a company called Reel 3-D Enterprises (PO Box 2368, Culver City, CA 90231; 310/837-2368). (When I stumbled on its catalogue, I went a little crazy and even bought a set of 180 stereo View-Master reels on Chinese art!) Reel 3-D supplies a wonderful array of 3-D photography and viewing supplies for the hobbyist. I am having a great time discovering ways to adapt this equipment to Amiga stereo images. Printed or photographed in the proper format, these can be viewed by anyone using one of the many models of available viewers.

Seeing Double

To make stereo pairs for optical viewers you must create separate left and right eye images as described in my article. Do not use the "inter-leaved" method I outlined for use with LCD glasses. Instead, mount two images side by side as in the accompanying illustration. Viewers for such a mounted pair typically have a separate lens for each eye that independently focuses on the left or right picture. The brain merges these views into a stereo image. Before printing such a pair, the Amiga artist must decide on an output medium, a size and format, and an appropriate viewer.

High-end output devices you might consider are the Polaroid CI-3000 or CI-5000 film recorders linked to ASDG's Art Department Professional to transfer your computer images to slide or print film. A pair of standard 35mm slides can be viewed in stereo by simply taping two inexpensive hand-held viewers together. Alternatively, Reel 3-D carries twin 35mm viewers ranging in price from $5.95 to $34.95. You could also hand mount your slide film in any of a number of standard 3-D formats such as Realist or European. Blank mounts and viewers for these formats are also available from Reel 3-D. If a film recorder is not in your future, you can send your Amiga disks to a service bureau for transfer to film.

A far more simple, inexpensive way for viewing images in stereo is to purchase a plastic hand-held 3-D print viewer (stock #2018) from Reel 3-D for $1.95. Then, with no further investment, you can assemble a stereo pair of images side by side on your Amiga screen and view them at the 10-inch focal distance of this viewer. As you might imagine, there are a few principles to consider. Your eyes are about two-and-one-half-inches apart. Viewing a pair of prints (or the computer display) requires then that the centers of the actual images be about 2½–3" apart. Centers separated by a greater distance become increasingly difficult to resolve. With slides this is not a problem, but it does limit the width of prints to about three inches.

An easy way to experiment on the computer screen directly is to shrink the image pair in a paint or image-processing package while you view it until it resolves into stereo. Of course, this is really only good for experiments and quick tests. Even in high resolution, the screen pixels are too coarse for good detail at this three-inch scale. Using some sort of print is a much better idea. As an example, I have planned the accompanying stereo illustrations to have approximately 2¼" centers as they appear on

Viewing images in 3-D stereo can be fun—and inexpensive. Here are some techniques for outputting stereo pairs for use with optical viewers.

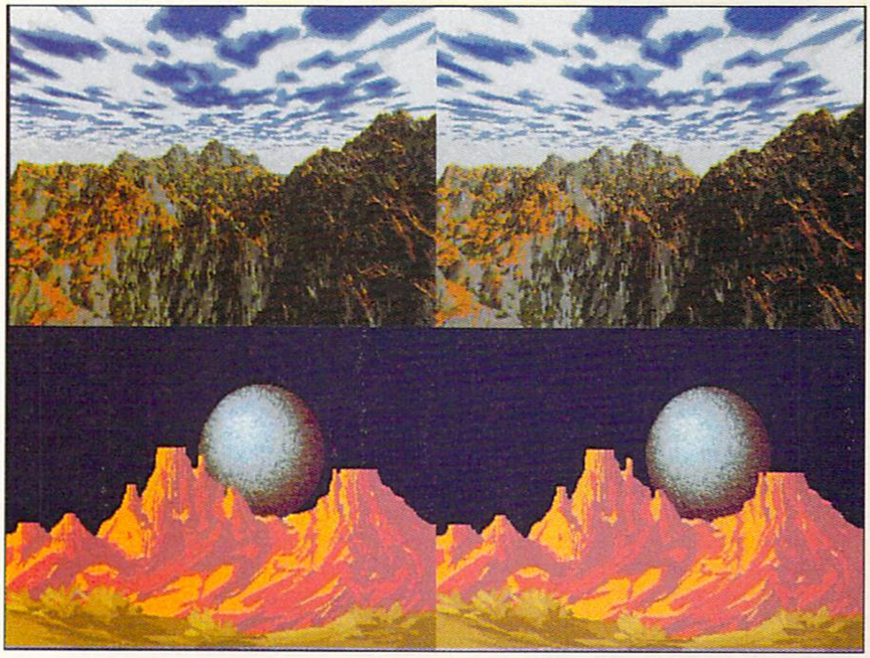
the page. This is suitable for direct viewing with any hand-held or folding viewer.

High-Quality Stereo Output

I have been having great success using ADPro's Prefprinter features and an NEC laser printer to produce stereo pairs. To try this in high resolution, create a 1280×400 page in ADPro by setting the Backdrop loader to that size. Into that space load the left 640×400 image. Load the right image using the Composite option, offsetting the "x" width by 640. Before printing, you will probably need to adjust the image values. In the VistaPro landscape (illustration, top), the Dynamic Range Operator analyzed a range of values from 0 to 140. For laser printout, I reprocessed that to a range of 40 to 220. I also raised the brightness of the image to +14 and the gamma to +21. Your settings will vary for each image, but this gives you the idea of the kind of balancing to explore.

In Prefprinter, manually set the image width to six inches, keeping the aspect ratio locked. This will yield a print with three-inch centers suitable for hand-held viewers. If you use a folding stereo print viewer that stands on legs over the image, you may need to reduce centers to two and a half inches. This is a five-inch total image width in Prefprinter. Try Floyd dither, Density 4 at 300-dpi (dots per inch) printer resolution. Experiment with your favorite color printer and also with desktop-publishing software, especially if you have access to 1200-dpi output or higher. Spray mount the print to illustration board and then trim it to size.

For best quality print images, output to a film recorder using 35mm print film. Optionally, use any camera on a tripod to shoot the screen. A little experimentation with camera distance will give you just the right image size in your developed prints.



Two sets of stereo landscape pairs are printed here, ready for viewing with any standard hand-held viewer. The top view was generated in VistaPro 3.0, while the bottom was hand painted in DeluxePaint IV.

Trim and mount them carefully. Do all your left/right adjustment in the computer to save work at the mounting phase.

My favorite stereo apparatus is the old Holmes Stereopticon, which can be found in antique stores, at yard sales, or maybe even in your own attic. This metal-and-wood relic of the 1800s and early 1900s has glass lenses in an elegant eye hood, a sliding holder for the stereo cards, and a folding wood handle. Mount your computer-generated images with three-inch centers on a 3½×7-inch card for use in this viewer. The anachronism of viewing modern computer images on this century-old instrument fascinates me. The quality is superb. ■

Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.



Troubleshooting In Paradise-1

"A nod is as good as a wink to a blind bat."—Monty Python

By Joel Tessler and Michael Hanish

WHERE THERE'S SMOKE, there's fire, so where there's no smoke, there's no . . . Well, maybe in the forest, but not necessarily in your video studio. Things you can't see *can* hurt your production. But how do you spot these unseen dangers, and what can you do about them? This month and next, we will look at some common production problems. Better yet, we'll discuss possible cures, and the tools and procedures necessary for setup and maintenance. Because whether your studio is bare-bones small or large and complex, the rules for troubleshooting and setup are basically the same.

Your first line of defense in the fight for video-signal integrity is a properly adjusted monitor. This will instantly alert you—subjectively and objectively—to problems with video levels, for example, or with hue (chroma phase). By contrast, a poorly adjusted monitor will sell you the Brooklyn Bridge.

Highly recommended, though not quite mandatory, are a waveform monitor and vectorscope. They provide the only truly accurate means for monitoring your video signal and signal path. Two products to help with this are DPS's Personal Waveform Monitor/ Vectorscope ($899), which provides both tools on a single internal board for the A2000, A3000, and A4000, and The Monitor (Magni Systems, $1799), a stand-alone external device.

Before we examine the use of these tools, let us first look at some of the most basic considerations.

Round One

If some variation on this scenario hasn't happened to you yet, it will: You are performing an edit, when you notice that the image on your program monitor has suddenly gone dark and shaky. But then again, it has been a while since you took a close look at the monitor, so you're not really sure when it began. Video, 1; Operator, 0. Your move.

First, round up the usual gang of suspects and assure yourself that none of them are guilty. Start with cables and connectors. They stretch, break, come undone, and wear out at the least opportune moment—and seemingly by themselves. Check each and every cable, connector, and adapter. RCA connectors are quite capable of pulling out of the port slightly and breaking the signal path. Be systematic and thorough. Check the stress points, just behind the connector, and inspect both the cable ends and the ports for oxidation and tarnish. A commercial deoxidizer/cleaner such as Cramolin can work wonders and increase conductivity. Immediately replace anything that is suspect; you have more important things to be concerned about.

Avoid adapters like the plague. Instead, use cables with appropriate ends. Ready-made cables with RCA plugs on one end and BNC on the other, for example, are available from video-supply houses such as Markertek and Comprehensive. (When purchasing new equipment, insist that it have BNC connectors.) Make sure that the cables are not running across or in close parallel to any power cords. And check every switch and knob: All it takes is one nudge to cause trouble.

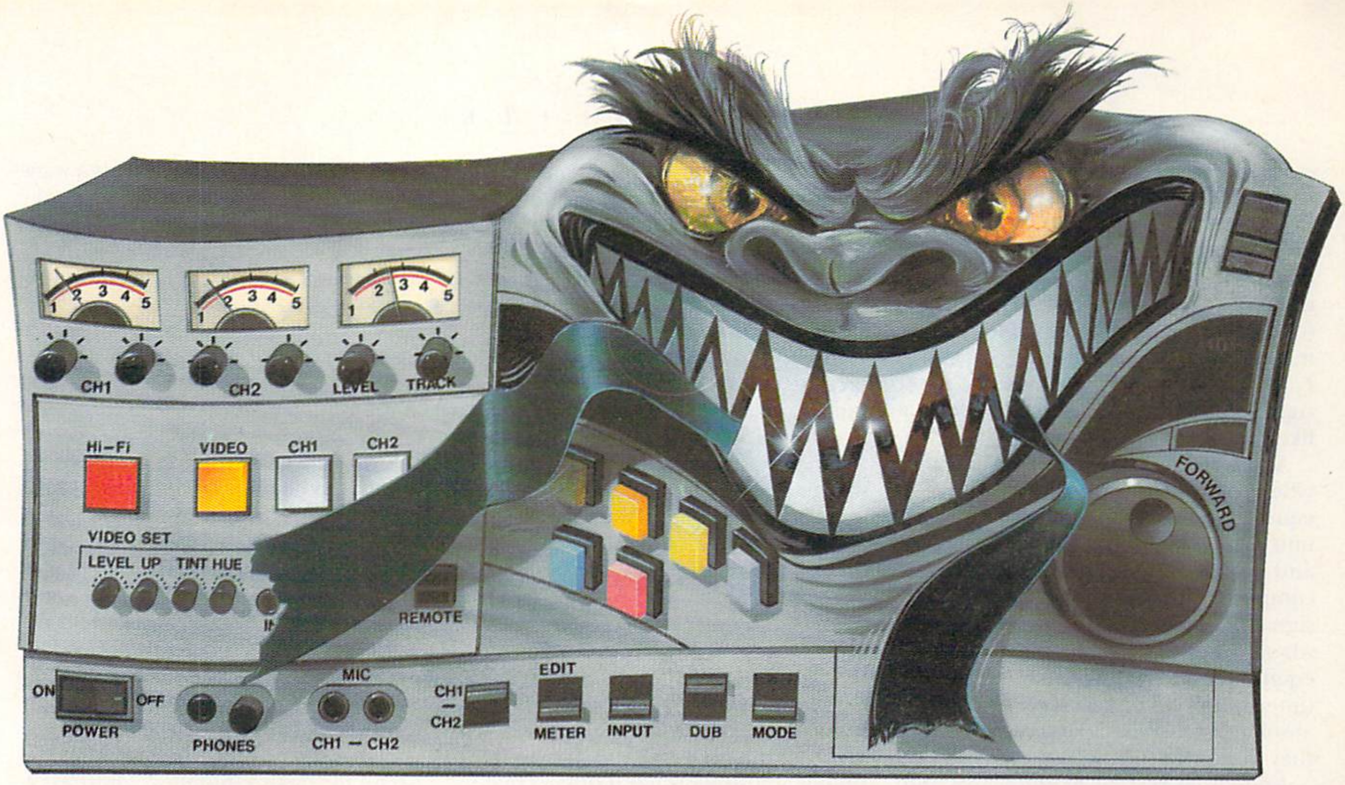
Don't be haphazard, though; there is an order to this process. To successfully track down the cause of a problem in the studio, you must start at the beginning and carry on until you reach the end—of the signal path, that is. You have to break the system down to its most discrete components, test them one by one, and slowly reassemble the parts you are absolutely sure of. Remember, there is a reason—however elusive or obscure—for the symptom you are seeing. No question is too dumb to ask or part too trivial to at least consider. Ask others with similar setups. Call the tech-support lines of the equipment manufacturers. Be persistent.

If your best efforts yield zilch and you are getting nothing done, consider the possibility that you're taking yourself too seriously. The very moment you decide to retire the unit as a boat anchor, step back and take a break. Tension can cause you to overlook as many problems as inattention.

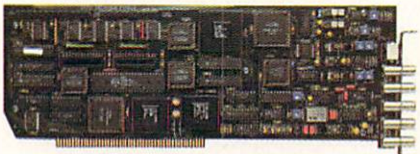
Ready, Set

What your grandmother told you is true: "An ounce of prevention is worth a pound of cure." Or, a few minutes devoted to proper setup is worth an hour of troubleshooting when there is a malfunction. You can avoid many problems by setting up properly in the first place.

Through the cables flows the lifeblood of your video venture, the signal. It simply won't do to have that flow degraded or slowed in any way. Insist on high-quality, shielded video cables. Saving some small change on cheaper cables can severely compromise the video image, introducing all sorts of unwanted interference patterns. Substituting audio for video cables, just because they happen to have RCA-type ►



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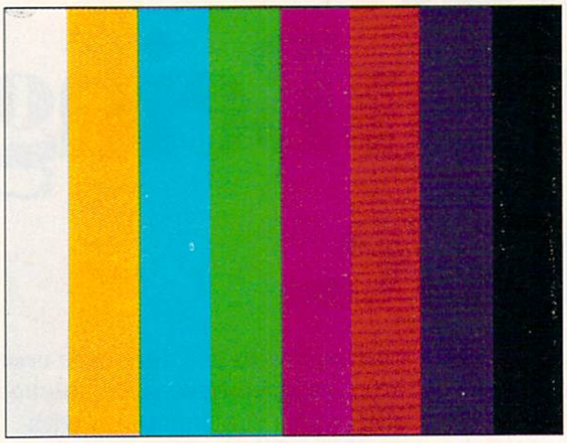
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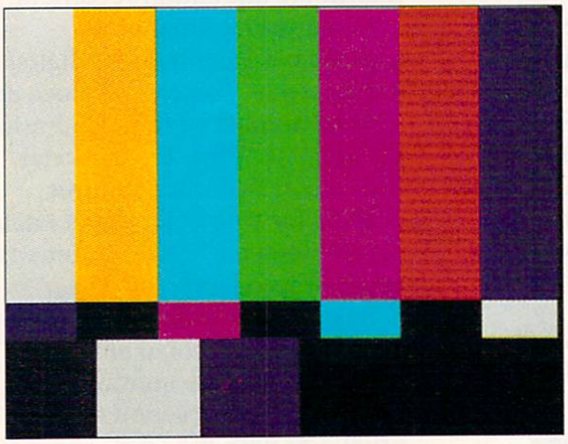
connectors, will severely degrade or destroy the signal. Inspect your cables frequently for stress points, especially just behind the connectors, and immediately replace any that are loose. Figure out why they have become stressed (often, just the weight of a cable hanging will do it) and alleviate the cause. Pay attention to the details and do it right so that the cabling won't be such a likely suspect in future situations.

As we said before, insist that the video connectors on any new piece of equipment be BNC-type. These lock into place with a twist, do not pull out, and provide better conductivity for the complex and sensitive composite video signal. When you set up initially, and whenever you add a new piece of equipment, make sure all termination (internal and external) is correct. If you absolutely must use adapters, be sure they fit tightly and cleanly.

Aside from regular maintenance, the most important preventive measure you can take is to carefully and methodically consider the layout of your equipment. The first priority for studio design is ergonomics, or the relationship of your work style (in the broadest sense) to the physical facts of your work space. After considering those demands, factor in cable length. In general, you want to keep your cables as short as possible, while giving your equipment plenty of room to breathe. To avoid introducing timing/phase problems, keep cables from multiple sources the same length.

When you are actually performing the setup, give yourself enough space to work, and maintain easy access to the rear panels (connectors) of the equipment. Lay out all the cables (power, video, and audio) in their approximate places. Make sure the AC lines are well separated from the others, and group them roughly into bundles of the same type. Alleviate any weight-related stress to the lines by providing support. Then make all the necessary phasing and timing adjustments (we'll discuss that in detail next month), perform an Auto-Hue test on your NewTek Video Toaster, and work out on the arrangement a bit to make sure you like it.





All colors in a full-field pattern (above) are equally bright. Below: SMPTE bars produced by DPS's TSG (Test Signal Generator).

When everything is satisfactory, dress the cables in neat bundles, making sure they don't hang unsupported or get stepped on. Label or color code both ends of each cable. Then, make a schematic of what is connected to what; at some point, you'll be very glad you did. If you must slide any piece of equipment into its own crevice (we recommend avoiding this, if possible), do it gently, being careful not to crimp any of the cables in back. Keep a mirror and flashlight handy.

Color Full

Color bars are an engineer's way of making sure everyone is on the same frequency. The two figures to the left show full-field and SMPTE color bars, both of which are vital test signals in any setup. Each provides well-defined bands of electrical information at specific frequencies, which we perceive as color. These patterns have different arrangements of colors for different purposes. Their most effective use is with a waveform monitor and vectorscope, as we will demonstrate next month.

Full-field bars are arranged with white (100 IRE, maximum legal white level) on the left, and black (7.5 IRE) on the right. If you are adjusting monitors by eye, notice that the white, yellow, and cyan bars all have the same amplitude, meaning that their brightness levels appear equal to the eye.

SMPTE bars have three signals combined into one familiar pattern. The top two-thirds of the screen contain a modified set of color bars, the only differences being lack of a black bar and white level at 77 IRE (about three-fourths the brightness of the adjacent yellow and cyan). The bottom portion of the pattern provides information for adjusting (100 IRE) white, black, color levels, and contrast. The signal at the center is a set of reverse blue bars, useful for picture-monitor adjustment.

Here's a relatively simple procedure for adjusting the levels on your picture monitor, using the SMPTE bars test pattern. If your monitor has a blue-only switch, turn it on. This turns off the red and green guns, giving you a picture with just blue chroma and luminance information. If your monitor doesn't have such a switch (and most lower-priced ones do not), use a piece of blue lighting gel to achieve the effect. Display the SMPTE bars, and compare the color bar on either side with the reverse bar directly below it. There should be no visible difference between the two—adjust the color level on the monitor if there is. Next, compare either of the center bars with the reverse bar below it. Again, adjust the monitor's hue control until there is no visible difference. Then turn on the red and green guns or remove the blue gel. Look at the black bars in the lower right corner of the pattern. Adjust the brightness control (black level) of the monitor until you can just barely see the brightest of the three bars (the right-most one), but not the dividing line between the other two. Monitors, like all equipment, change as they warm up, so give them 15–20 minutes before performing this test.

The price of good video is eternal vigilance. This is especially true in the smaller videotape formats (VHS, S-VHS, 8mm, and Hi8), where there is limited picture information (resolution) to begin with. Here, the loss of even five percent of resolution is very noticeable.

Next month, we'll talk about diagnosing problems with test equipment. ■

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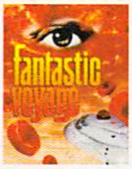
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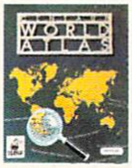
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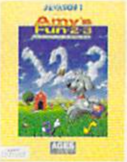
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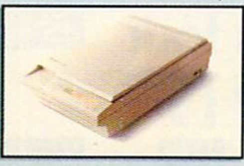
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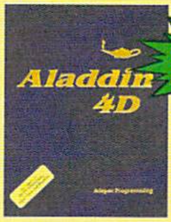
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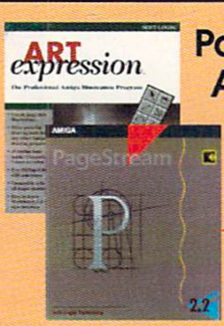


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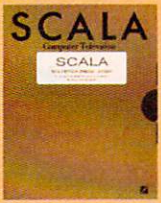
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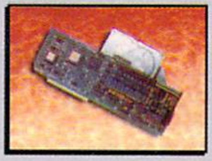


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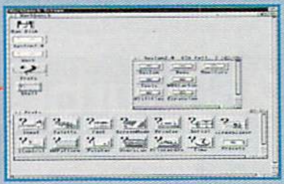


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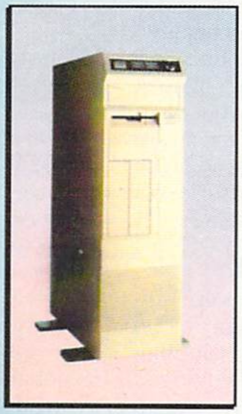
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A few "gotchas" in the design of Great Valley Products' DSS8 kept the product back in the pack of eight-bit audio digitizers for the Amiga. With DSS8+, the latest hardware and software upgrade, GVP sounds off with a vengeance and pulls out to join the front-runners. Major hardware improvements and some nice touch-ups to its already versatile software make DSS8+ one of the best choices among eight-bit stereo Amiga samplers.

Sound Potential

Two primary problems dogged the DSS8. Like other Amiga samplers, including the DSS8+, the DSS8 attaches to the parallel port on the back panel of the Amiga. Since the knobs to adjust input gain were located on the older DSS8 hardware, you had to get to the back of your computer to tweak input levels, an inconvenient chore in your typically inaccessible computer setup.

The solutions to the problem, such as an extender cable or a parallel-port switching box, threatened to add additional noise to your sampling process. But the input potentiometers *also* increased the threat of noise. Some users have reported DSS8 noise problems that they attributed to those volume controls on the circuit board. That design decision is, of course, common to many Amiga digitizers, including SunRize Industries' Perfect Sound and Aegis' Sound Master. Even so, the purists, ever on the alert for the most insignificant hiss and crackle, detected less than pristine results in some situations.

The DSS8+ decisively addresses both problems by doing away with them. Encased in clear plastic that exposes the hi-tech glamour "guts" of the DSS8+, the unit has no adjustment controls of any sort, just the parallel-port connector on one end and stereo RCA jacks and a microphone input on the other. Once you've attached your DSS8+, you'll never have to touch it again, because all additional adjustments are accomplished with the DSS software. (Unless, of course, you have another parallel-port device, in which case you'll need to resolve the problem that the DSS8+ has no pass-through. To avoid noise, GVP suggests using its ioExtender for the A2000/3000/4000 rather than a switch box.)

Slick Samples

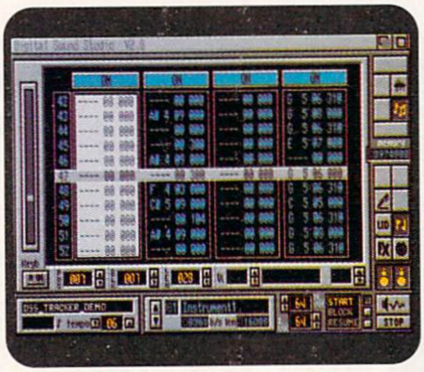
To adjust the input gain, you move software sliders in the DSS sampling software, viewing an on-screen oscilloscope to determine when your samples are going into clipping. GVP has added an Auto-Gain feature that makes the software check out a few seconds of input and then automatically set gain. However, when sampling from a source with a wide dynamic range, I found that Auto-Gain invariably set levels too high.

The DSS8+ has a programmable low-pass filter that attenuates high-frequency sounds during recording. By fine-tuning the filter's cutoff frequency (from 1 to 25 KHz), you can avoid the aliasing distortion that occurs when incoming sound surpasses the frequency response of your sampling rate, while still maintaining the best possible sound quality.

The source of the input is also selectable in software: left or right channel, stereo, or microphone input. When sampling in stereo, the DSS8+ hardware completes channel selection ahead of the Amiga, thereby leaving a little extra processor time free for other things.

Big Sound, Little Money

The DSS8+ specs and features are otherwise similar to its predecessor: mono sampling up to 51 KHz, stereo sampling to 42 KHz; full cut/copy/paste editing of samples, as well as setting loop points (though the software still doesn't help you find zero points); real-time oscilloscope and spectrum analysis display screens; support for IFF, SONIX, and RAW file formats; AREXX support; and the Tracker song-sequencing module, which lets you use MIDI input to create compositions with your digital samples.



The DSS8+ control panel.

The DSS8+ is a terrific little package. The sound quality is sharp and clean, and the software is versatile and easy to use. I still may find myself sneaking over to Audiomaster III for a few editing touch-ups, but this is, on the whole, one of the best-quality and best-buy choices in Amiga sampling.

—*Bob Lindstrom*

Professional Page 4.0

Gold Disk, $295

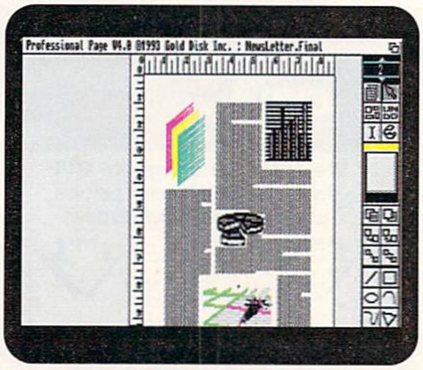
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Recommended system: 4+MB RAM, hard drive, AGA, 68020 or higher,

AGA upgrade of popular DTP program.

With the introduction of the Amiga 1200 and 4000, software developers have burnt the midnight oil rushing to get AGA versions of our favorite programs to market. Programmable screen modes and 256 colors on the Workbench are great reasons to update and overhaul even the best programs. It seems only yesterday that version 3.0 of Professional Page was introduced, making a strong program a mighty one. With version 4.0 (officially designated 4.0a), Gold Disk has brought AGA support—along with a few minor but necessary enhancements —to the premier Amiga desktop-publishing program.

A Few New Genies

ProPage previously offerred genies, better known as ARexx macros, to take care of some tedious, repetitive layouts. 4.0 includes a few new genies in addition to those bundled with 3.0. The manual's addendum, however, explains the possibilities of editing genies, so you are not limited to the six supplied with ProPage.



AGA compatibility comes to ProPage with the release of version 4.0.

Thanks to the half-dozen on call, I put together the Daily Planet newsletter in roughly ten minutes, using the supplied tutorial text file and graphics.

Spiral-bound documentation covering virtually every aspect of ProPage makes an attractive package, but it would be nice if it covered 4.0, not just 2.0. Gold Disk simply lifted the docs from 2.0 and added an 88-page unindexed supplement to address version 4.0a.

In creating 4.0, Gold Disk added only a few features to those existing in 3.0. Like other AGA programs, ProPage 4.0 automatically opens a 256-color window instead of the default 16-color version. Text-import filters haven't changed from 3.0, but graphic filters now abound. There's support for TIFF, PCX, EPS, GIF, and BMP, as well as Adobe Illustrator and Aldus Freehand EPS files. You can now accomplish cross-platform projects with relative ease, since there's nary a format ProPage can't handle.

New Features, Nice Touches

A nice touch added to the tool bar is a notepad that lets you type a note to yourself and affix it anywhere on the page. It does not show up when you are printing, but appears each time you flip to that page. I find this feature especially handy when making changes to an ad. I just place it on the screen and it's there to refer to when I'm working on the project.

When you have to supply the labels for a mailing list or disk-labeling project, ProPage 4.0's page genies make life easy. In invoking the page genie for, say, Avery Labels, a reference list appears with labels for North American and European versions, in both laser and dot-matrix formats. Numbers are a help in ordering the correct size of label. Fountain fills in Professional Draw clips now show up both on screen and in print, which was apparently not the case in previous versions.

ProPage 4.0 continues to support all of Gold Disk's "Professional" programs. Hot-linking to Professional Draw allows you to edit structured drawings without leaving ProPage, and 4.0 also hot-links to its Article Editor and a new Graphics Editor for bitmaps.

The Article Editor is a text editor whose sole mission is to easily move text from any source to ProPage; it does so without a hitch. On the other hand, the Graphics Editor is somewhat limited by a lack of features. For example, ProPage imports six different bitmaps, but the Graphics Editor accepts only IFF files, so changes to images in any non-IFF format must be converted by using a graphic utility such as ASDG's Art Department Professional. Gold Disk knows this, as one of the function genies is called ADProHotLink.

Boxed In

Professional Page 4.0 does have its idiosyncrasies. For instance, if you have text in a box, making the box smaller might lose some text. Another example is drawing a single line. Instead of two endpoints, the line is locked up in a box so that you cannot stretch or shrink it; rather, you

Continued on p. 68.

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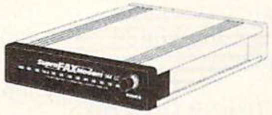
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Circle 10 on Reader Service card.

From p. 65.
move the boundaries of the box.

When working with lines, you ensure that corners are joined by using magnification. The custom setting in ProPage has, however, a maximum zoom of 400%, which is only marginally acceptable for seeing junctions of fine lines. I also don't like the fact that the text cursor jumps to the upper-left corner of an empty box no matter where you click inside the box, the default left-justify.

Another glitch is that you cannot effectively use the text cursor to move the page-position gadget around, for it jumps a few lines away from where you are trying to position it. Finally, ProPage 4.0 is a big program that places big demands on both the CPU and the video chip set. You will speed up your work by upgrading to a 68030 accelerator for earlier Amigas.

A Costly Few Enhancements

While ProPage 4.0's attributes are considerable, registered owners of 3.0 must pay an additional $75 to upgrade to 4.0. (Note: Registered owners of 3.0 can, however, upgrade to 3.1 free by contacting Gold Disk.)

The idea behind desktop-publishing software is to make creating beautifully detailed documents as easy as writing down the idea. To this end, Professional Page 4.0 does not disappoint and is worth its price to anyone who does not currently own ProPage. The question remains whether it is worth buying 4.0 as an upgrade for $75. To anyone with an A1200 or A4000, the answer is a resounding yes. Even if you don't have an AGA machine, 4.0 and Gold Disk's new Professional Draw together constitute a combination capable of letting the genius in you explode onto the page. And that's what DTP is all about.

—Micheal Savoie

Retina

MacroSystems US, 2MB version: $599; 4MB version: $699

Amiga 2000/3000/4000.
Workbench 2.0 or greater; 3MB of RAM.
2000 owners should have an accelerator, though it's not required.
Installation: Easy.

24-bit display card.

Long before Commodore fed the Amiga 4000 to the resolution- and color-hungry masses, third-party developers were scrambling to fill the void with numerous 24-bit display cards. The Amiga was slowly being upstaged by Super VGA, as well as Targa and Macintosh 24-bit boards. Because of the demand for more color and higher resolutions, a host of products have inundated the field of Amiga graphics.

Low-Budget, High-End Graphics

MacroSystems now appears on the scene with the Retina 24-bit display card. Because it offers true 24-bit color (unlike such peripherals as DCTV) and a low price, it has caused quite a stir in graphics circles. The real *coup d'etat* is that the board emulates Workbench in 24-bit, high-resolution mode. Switching between two monitors (one for 24-bit displays and a second for Amiga resolution) is no longer required.

The Retina is a Zorro II Autoconfig device. It installs into any vacant 100-pin Amiga slot and is ostensibly compatible with both the Video Toaster and OpalVision (according to MacroSystems). Two configurations are currently available, with either two or four megabytes of Fast Page DRAM. The 2MB version offers full-overscan 24-bit display, while you'll need the 4MB board to accomplish double-buffering animation. You'll also need a VGA or 1950/1960 Commodore monitor. Apparently, MacroSystems is working on a 24-bit RGB adapter for owners of the Commodore 1084 monitor, but details are sketchy.

System Support

Two important programs bundled with the board are the RetinaScreenMode and RetinaEMU. The first one tells Retina what type of monitor you are using and sets up the default display modes (256 colors, 65,536 colors, or 16.6 million colors). A list of the most common VGA and Commodore monitors is available. Don't worry if your monitor is not listed; consult your monitor manual and enter the vertical and horizontal frequencies.

The maximum resolutions available are 800×600 with 16.7 million colors, 1024×768 using 65,000 colors, and 1280 ×1024 in 256 colors. Using just 16 colors, screen resolutions of up to 2400×1200 are possible.

The second program makes possible an intriguing option—the Retina's Workbench emulation. RetinaEmu is the crux around which the Retina's operation revolves. The package uses its own graphics chips and library routines to effectively take over the Amiga system. Then, as you launch a Workbench application, Retina gives the application the resolution it asks for—or you can specify your own preferred screen resolutions. You cannot, however, just plug in the Retina and a VGA monitor and lapse into 24-bit bliss. Before you can launch an application in high-resolution or 24-bit mode, Retina must "learn" about the program beforehand, and this is where RetinaEmu comes in.

When you first start a program, it appears normally on your Amiga monitor. But once you leave the program, you'll find that Retina has recorded the program's screen name. By toggling from Amiga to Retina output on the RetinaEmu screen, you redirect the output to the VGA monitor the next time the program is launched. You'll only have to do this once for each program on your hard disk. After that, the Retina automatically displays the program on the VGA monitor. You boot up in Retina mode by modifying your startup-sequence or by dragging the Retina icon into the WBstartup drawer.

Because the Retina is equipped with graphics chips, Workbench performance is accelerated dramatically, even in high resolution. Users of unaccelerated Amigas may feel as if they've gotten a boost with Workbench running on the Retina. Likewise, you can effectively kiss interlace flicker goodbye. The Retina board, running on a VGA monitor, virtually eliminates all flicker, even in high resolution. Flicker is a real headache, as anyone who has ever used Imagine's Detail editor in interlace mode can attest. With the Retina, you can pull up a great-looking 800×600 Imagine display that won't give your eyes the jitters.

Good News Travels Fast

The Retina's most amazing aspect is one that's most uncommon among devices of this genre: It works as advertised. Creating a fast, good-looking, 1280×1024 noninterlaced Workbench screen for under $600 is no small feat. Retina should definitely be a boon not only to artists and 3-D animators, but to desktop publishers as well.

One unique and interesting aspect of the card is its ability to layer screens of different resolutions. Normally, for example, you'd have to exit a 24-bit screen in order to pull up an eight-bit screen. With Retina, you can use hot keys to cycle through any number of screens with different resolutions and color depth. In other words, you could have a 24-bit im- ►

Circle 34 on Reader Service card.

age, a 640×400 Workbench screen and a 300×200 DeluxePaint screen in memory simultaneously. You're limited only by the memory on the Retina card.

Rounding out the programs on disk is a 24-bit painting program called VD-paint (soon to be replaced with TV-paint—release date to be announced) and support for ASDG's Art Department Professional and Black Belt's Imagemaster. Finally, if you own a V-Lab real-time video digitizer, you can grab images directly to the Retina and use its custom animation routines to produce simple, page-flipped, double-buffered animations.

As of this writing, real-time 24-bit animations aren't possible with 24-bit boards, including Retina; don't abandon your single-frame controllers. (Some recently announced boards will change this.) MacroSystems is working with several companies to develop animation players for Retina. Furthermore, only programs that open recognizable screens or that are not tied heavily to the graphics-chip capability of the Amiga will produce displays on the Retina.

Graphics-intensive games are not the Retina's forte, although it gave Sim City a different twist, with my VGA monitor displaying the Map screen and my Amiga monitor operating as the Editor screen. Games notwithstanding, I encountered no compatibility problems. DeluxePaint, Imagine, Videoscape, Scenery Animator, and a host of public-domain programs performed without a hitch. Caligari, however, is not compatible with this board, but MacroSystems is reportedly looking for a solution.

Manual Blues

Low points include a malfunctioning hard-disk installation program and a poorly written manual. Posing as a Retina user, I had to rely on technical support to get around a couple of problems not covered sufficiently in the documentation. MacroSystems has subsequently agreed that a rewrite is in order.

Small complaints aside, Retina is one of the most exciting Amiga products to appear in recent months. Low-cost 24-bit hi-res capability, screen-flicker elimination, and a faster-than-stock Workbench constitutes noteworthy news. Also, rumors have it that Impulse's Imagine 3.0 may directly support the Retina. Even if AGA support never arrives for the 2000 and 3000, the Retina 24-bit display card provides an alternative.

—John Ryan

MBX-1200z

MicroBotics
Unpopulated: $149;
w/Real-time clock: $175;
w/14 MHz 68881 FPU and real-time clock: $215.

A1200.
Installation: Easy.

FPU, 32-bit memory card with real-time clock for A1200.

You've just unpacked your new AGA-equipped Amiga 1200, installed a few graphics programs, copied over a few OS 3.0-compatible display utilities, and generally prepped both yourself and your machine to lapse into HAM-8 bliss. Not so fast, 256,000-color fans: You probably won't to be able to run applications on your stock 1MB A1200, and you'll run dangerously low on RAM displaying photographic-quality graphics.

Quick-'n'-Easy Fix

It's a rare Amiga enthusiast who hasn't heard of the company of longstanding accelerator fame called MicroBotics. These enterprising Amiga folks were the first on the scene with a Motorola 68881 Floating Point Unit (FPU) RAM expander card for the A1200—the MBX-1200. An FPU (as any Computer Science 101 student should know) significantly reduces the computation times the computer requires for accomplishing mathematical operations. With the recent release of the battery-backed, real-time clock-equipped MBX-1200z, MicroBotics' RAM expander has moved to the forefront of the increasingly competitive A1200 RAM market.

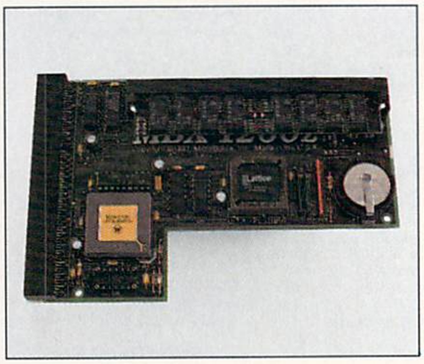
Sold with an empty 72-pin, 32-bit SIMM expansion slot (same as those on the A4000's motherboard), and either a 68881 or 68882 FPU (math chip and crystal) upgrade kit, the MBX-1200z is designed to add 1MB, 2MB, 4MB, or 8MB of 32-bit fast RAM to your A1200. You can buy an unpopulated MBX-1200z, install your own 80ns (there's no speed advantage with 70ns or 60ns) SIMM module, and set a jumper on the board to activate the RAM.

Unlike its brawny big brother, the A4000, the A1200 has no 100-pin Zorro expansion slots, but it does—like the A500—offer a mini-expansion bay beneath the keyboard. To install the MBX-1200z, you simply flip the computer over, pop off the bay door, and carefully work the card side-to-side until it pops into place. Put the bay cover in place, plug in all the respective cables, and you're ready to fly.

Far and Wide

With a 4MB MBX-1200z where it belongs, and an IBM Super VGA monitor sitting pretty next to *AmigaWorld's* test-bed 52MB IDE hard disk-equipped A1200, I was cooking in about one minute flat. While the IBM monitor is physically smaller than my A4000's Commodore 1960, the display was a virtual replica. SysInfo and AIBB tests don't reflect the 32-bit wide RAM, 68881 FPU, and '020 performance of the A1200. Suffice to say, an eight-color pattern Workbench made it behave on a par with, for example, a 128-color full-screen backdrop Workbench on an A4000/040. Translation: It's fast, but it hardly qualifies for blistering speed.

The additional 4MB, coupled with a copy of the freely distributable 3.0-compatible program ViewTek 1.04, allowed me to load and display on the A1200 graphics-intensive HAM-8, JPEG, and IFF-24 images copied from my A4000. Large animations (more than 3MB) were, as I fully expected, a problem. With the simple upgrade to an 8MB SIMM, and allowing for a full megabyte of RAM to accommodate the OS, Workbench, and display software, the A1200 could no doubt handle a 7MB hi-res animation with aplomb.



The MBX 1200z adds up to 8MB of 32-bit RAM to the A1200.

Is the MBX-1200z a good investment? If you're satisfied with the A1200's overall performance or haven't the spare cash to invest in an '030 accelerator for the machine, the answer is a definite yes. Be prepared, however, to spend fewer evenings watching sports...and more enjoying hi-res images on your A1200.

—Tim Walsh ►

SQ5110C Removable-Cartridge Disk Drive

Syquest, $650 (Approximately—see dealer for configuration and pricing)

All Amiga models.
SCSI port, internal or external.
Installation: Easy.

Removable media hard-disk drive.

If you've compressed, archived, and generally crammed every last byte you could into your hard disk, only to find you still need *more* storage space, how big should your next drive be? 100MB? 200MB? Before you end up with another hard disk that's full before its time, you might want to consider an alternative to the traditional fixed disk—a removable-cartridge Syquest disk drive.

Versatile? You Bet. Fast? Well . . .

Syquest cartridges are the removable media of choice for the Amiga. Sturdy and reliable, they're easily integrated into SCSI-equipped machines. While single-sized Syquest drives have been media fixtures for years, the new SQ5110C boasts the ability to handle two cartridge sizes—44- and 88-megabyte. If you already use the lower-density cartridges and have been longing to use the 88MB size, the 5110C might be just the ticket.

With an advertised access speed of 20 ms, the 5110C is obviously not going to set any records in saving and loading your data, although it does produce respectable performance. Using the freely distributable program SysInfo, I found the drive reads about .902MB/sec. Compare that to the A4000's IDE drive (1.067MB/sec) and the A3000's SCSI (.913MB/sec), and you'll see that the Syquest's performance differs little from most current hard drives.

The user's manual overindulges in fine print, but most of it is unnecessary for the average user. Installation is a snap. While the stock A4000 lacks the needed SCSI controller, the 5110C attached quickly to mine via a Wordsync controller, using either internal or external connections. It even worked fine connected to my A500's GVP Impact Series II.

The internal version of the 5110C measures 5.75×1.63×8 inches. When encased in an external enclosure, the drive expands to roughly a Webster's Dictionary size of 9.75×2.4×10.4 inches. Be forewarned, however, that even the smaller internal versions of both the new 5110C and the older 5110 won't fit inside the A4000's housing. Consequently, the drive is left perched atop the computer, leaving the 5.25-inch bay vacant for other devices, such as a Bridgeboard or another internal drive. As a consolidation, the case is colored in soft beige, to nicely complement the attractive A4000.

Cleared for Take-off

To use the drive, simply pop either a 44MB or 88MB Syquest cartridge in the door and sit tight for the recommended 11 seconds as the drive spins up to full speed. You'll know when the time has elasped, as a light on the front of the drive turns from red to green. To swap cartridges, you disengage the mechanism with a button on the front of the drive, which then automatically spins down. You can then remove the cartridge by pulling on a mechanical lever.

To the uninitiated, the sequence is not without some small drama. Pulling on the aforementioned release lever quickly thrusts the Syquest cartridge partially out of the 5110C. Caught off guard, you expect to see your precious cartridge continue its flight directly to the floor. Not to worry; it always stops halfway out.

To use more than one cartridge per session, be sure that your SCSI controller recognizes removable media. Standard controllers—such as the Commodore 2091—work well, while it's hit-or-miss with older (pre-1990) hard-drive controllers. The 5110C formats, reads, and writes both 88MB and 44MB cartridges without a hitch, but saddled with my Wordsync controller, my A4000 acknowledged only the size of the first cartridge placed in the 5110C. Replacing an 88MB drive with a 44MB one, or vice-versa, resulted in the infamous "Not a DOS Disk" error.

I suspect my Wordsync controller didn't recognize the 5110C's dual-format capability. Once configured to read 88MB cartridges, the 5110C had no trouble reading those made on earlier Syquest units, such as my 88MB 5110. Aside from the Wordsync flaw, operation was smooth, seamless, and elegant.

A Need to Feed

If you've outgrown your primary hard disk, the 5110C can look mighty attractive. Storage space is limited only by the number of cartridges you purchase. An initial investment in a 44MB cartridge lightens the coffers by about $85, while an 88MB cartridge costs roughly $120. The per-megabyte cost, however, drops with the purchase of each additional cartridge, eventually leveling out at about $1 per megabyte.

The 5110C is ideal for video applications and gives ordinary data storage a new twist, as moving huge graphic, sound, and data files from one Amiga to another becomes almost too easy. You won't ever want to use floppies for backup again, for all of your hard drive's most important contents will fit on a cartridge or two.

Perhaps the strongest argument in 5110C's favor is its compatibility with both 44MB and 88MB cartridge formats. An added bonus is its ability to read MS-DOS-formatted Syquest cartridges via Consultron's CrossDOS (included with AmigaDOS 2.1 and higher). Lastly, if you develop software or use NewTek's Toaster, 44MB bootable cartridges for the 5110C allow you to create custom startup configurations.

Not everyone needs a Syquest. If you don't own a hard disk, and are thinking of using a Syquest as a primary storage medium, think again. While booting from a Syquest is remarkably convenient, you may find yourself cartridge swapping with the unit as if it were an enormous floppy drive. However, if you're shopping for a second or third hard drive, or a standard Syquest, give the dual-format Syquest 5110C some serious consideration.

—Dave Johnson

Pro-Board 3.0

Prolific, $399.

All Amiga models.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
1.3/2.0/3.0 compatible.

Printed-circuit-board design software.

Prolific has upgraded its PCB-making package, Pro-Board 3.0, to meet the increasingly demanding needs of those who create circuit boards.

The three-disk 3.0 (3.03 at present) package consists of four separate programs: Pro-Board (the PCB editor), Pro-Lib (which creates shapes for PCB layout), Pro-Plot (a print and plot generator), and Pro-Drill (for automated drilling of holes in a PCB).

Everything but Pro-Drill auto-installs on your hard disk. Prolific recommends

1.5MB of RAM and Workbench 1.3 or 2.x. Pro-Board uses a custom screen, most of which is available for operations. Text gadgets called "Intelligent Function Keys," or IFKs, line the bottom of the screen and change depending on your current section. The mouse or a function key activates the related function or enters a new IFK "level," and the Escape key cancels operations or moves up one IFK level.

You configure Pro-Board with IFK-Config, which specifies your data, libraries, plotters, and drill-file format. Because all the Prolific tools read the same initialization data (where appropriate), this need be done only within the main program.

Trial Run

To start a board, select IFK-New. A menu appears with various options, including Fine-Line mode for routing two traces between 0.100-spaced pins. The program supports various sizing rules, automatic power and ground-plane options, up to 16 eight-signal layers, and large PCBs.

Pro-Board uses the Calay netlist format. My first test board was a simple dynamic memory board with sixteen 28-pin surface-mount DRAM chips and two 0.050-pitch edge connectors. After I specified the PCB and netlist names, Pro-Board prompted me to go ahead without a parts list. (A parts list tells Pro-Board which shapes to use for each component. I selected IFK-FootP, which allowed me to specify a shape for each part.)

Pro-Board automatically makes DIP, SIP, and similar simple parts, which you can enter directly. Complex shapes are called out by Shape filename in the parts list, and you create Shape files with the Pro-Lib utility. Once you've entered all the parts, you get down to business creating a PCB.

Guided by a coordinate display, I began drawing my PCB outline by laying down a line. (You can also type coordinates rather than draw.) Next, I placed the edge connectors, "glued" them in place, and proceeded with autoplacement. With a little tweaking, Pro-Board generated a nice, regular pattern of DRAMs.

I then used IFK-R-Rule to set the routing rule. A maze algorithm is always a single-layer router, while a channel algorithm can run on one or two layers. Several options determine how it will deal with vias—the connectors between PCB layers. Some experimentation may be necessary at this point: I didn't care for the results of the router's defaults, so I changed some settings.

The manual isn't very professional and is unclear at points. It states that the routing "speed" is 1 for best quality, 5 for fastest, but the on-line documentation claims the opposite. Mistakes forgiven, I found it useful.

Autorouting is not a fast process, and this holds true with Pro-Board. Even with the "better" settings and running on my '040-equipped Amiga, Pro-Board finished less than half my board in an hour. The program is clever about getting to the pins of a device, which are only on one side, but it can't easily trace between the pins of most SMT devices. After substituting DIPs for surface-mount parts, the board routed in about seven minutes.

When putting a trace down, a router cannot always anticipate just where another trace may be needed. To handle this, Pro-Board's "rip-up" option will remove and reroute one trace and position another for a better layout. (Pro-Board does not employ sophisticated "push-and-shove" techniques, which push aside existing traces to let new ones through.)

While Pro-Board offers no optimizing—and its layouts cannot match those of professional systems—it does a better job than previous routers. With a tight surface-mount design, its autorouter can help in spots, although it cannot do much on a global level. For boards with more room, and given the time, you can route to completion in due course.

In addition to automatic features, Pro-Board 3.0 has improved manual place and route options, which are helpful for specific-placement needs and manual optimizations.

A More Complex Board

Using Pro-Board 2.0, I had designed a two-layer SCSI/DRAM board in about two weeks' worth of evenings. I figured this would be a good test for Pro-Board 3.0.

I set this up as a four-layer board (for less complexity), placing and "gluing" a few components. I worked out a grid, then decided to break my board up into IFK-Group sections and attempt some autoplacement. Initially, the program took a long time, but as I worked with the placer and individual groups, a better layout materialized. I put in some IFK-Forbid zones and increased the grid size to create a decent board. Complete autoplacement was flawed: I discovered that the program made some bad decisions. After additional hand tweaking, I got an acceptable placement.

I started the autorouter, and after about 10 hours, it had routed 494 out of 567 nets. To clean up some traces before more autorouting, I put 3.0's manual routing capabilities to the test, which allowed for easy adjustments. I think 3.0's manual enhancements alone make the upgrade worthwhile, though I would like to see a "zoom-in" mode for fine work. Overall, Pro-Board did a nice job, and in one day the board was completed.

The Rest of the Package

Unlike the integrated librarian in 2.0, 3.0's Pro-Lib handles large shapes as single units. It can deal with 25-mil or 20-mil grids, and you can enter parts numerically off grid. It also handles through-hole or surface-mount type pads; the latter can be on either side of the PCB. You can enter lines, circles, boxes, and text independently of pins on some or all of the various layers in the shape.

Pro-Plot creates plot files in HPGL or Gerber format; you can also adjust apertures for the Gerber photoplotter. Another nice touch is the software recognition of several specific HPGL- and Gerber-compatible plotters. It also produces prints on a Preferences-supported printer, though they're not very good; PostScript support would be an improvement.

PCB makers charge for "drill tapes" if they are not supplied. Thankfully, Pro-Drill produces drill-tape files in two standard formats: True-Drill and, by way of a conversion program, Excellon. You can adjust some drilling details from within the software.

A Qualified Thumbs-Up

In the autorouter, I got a single Enforcer hit after selecting Re-Route. It appeared to be a consistent, though not troublesome woe. From the IFK-Auto-R level, though, I got a severe crash while manually deleting part of a routed net: Pro-Board locked up and a series of Enforcer hits resulted. A similar problem occurred a few times during routing. At other times, Pro-Board locked up in automatic and manual modes.

These bugs make it hard for me to recommend the program for commercial work, at least in its present state. Prolific maintains a support conference on the Portal network, however, and is working to solve these problems.

Still, Pro-Board 3.0 is the best PCB program for the Amiga, and a worthy competitor for anything on the IBM-PC or Mac at a comparable price. It'll no doubt pay for itself after your first or second board if you're currently farming out your PCB work.

—Dave Haynie ■

The Game Preserve

By Peter Olafson, AW Games Editor

Bard's Tale Construction Set

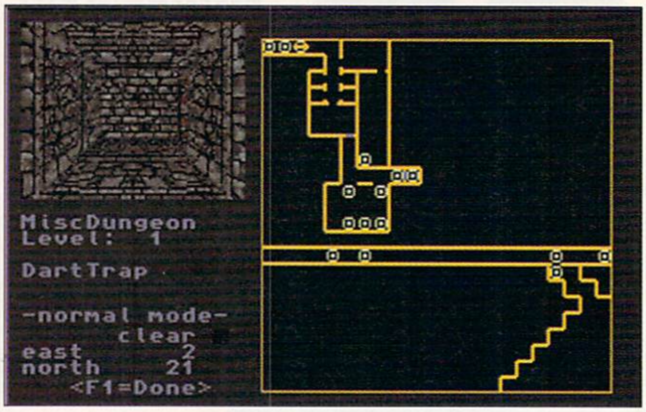
A-
1.2/1.3 ✓
2.0 ✓
3.0
Hard-drive installable.
No on-disk copy-protection.

BACK IN 1986, Bard's Tale was one of a handful of games that made the Amiga seem special. The medieval theme music for this elemental role-playing game was lovely; I'd sometimes turn on the game just to listen to it. The graphics had a silvery edge, and the world beyond the veil of torchlight was forbidding. I held my breath every time I opened a door.

Now, seven years later, a door has opened for us: We've been handed the tools to build our own Bard's Tales. Bard's Tale Construction Set (Interplay, $49.95) is a system—the first of its kind—for making hack 'n slash, 3-D RPGs under this venerable (if not outdated) game system. It's a cleanly designed product disappointing only in its shortage of building materials, poor documentation, and failure to take advantage of the opportunity to bring the game system up to date. If you played the original games to distraction, you'll probably enjoy this—albeit in a nostalgic sort of way.

BTCS is essentially an attractive shell for a packet of linked editors—for items, maps, monsters, and spells—and a utility for putting the games together and testing the results.

Ease of use is an enormous advantage in any construction kit, and, for the most part, this one is easy to use. You can produce a new 22-square by 22-square region in no time. The map-maker lets you place wall tiles from an overhead view in one window and immediately see the results in 3-D in another. A new critter can be rung up by setting 16 parameters—most of them intuitive for those familiar with RPG rules—and



Role your own 3-D RPG with Bard's Tale Construction Set.

attaching one of the built-in animated character graphics (which often are delightful) or importing one of your own.

The toughest part is creating "specials"—that is, the string of commands touched off (sometimes invisibly) when a party moves into a given square. They may range from atmospheric text messages and traps to puzzle pieces and story branches, and it's from these that a BTCS-built game draws much of its character.

Even here, where you might expect Interplay to slip in some programming, BTCS still feels more like a construction set than a programming tool. Each special consists of up to 20 segments written in what's essentially a vastly simplified version of BASIC. It's easy to learn—each segment consisting either of an action (DO) or a set of conditions and consequences (IF ►

CRIB NOTES By Peter Olafson

Level Two of Shadow of the Beast III (*Psygnosis*) starts off in more puzzling fashion. Bypass the broken-down battering ram for the time being, and push right until you find a switch at the moat's edge. It lowers the drawbridge, beyond which you'll find the ram's missing wheel. Push it back to the ram, where it will take its proper place, then push the ram right to a closed door. The battering ram will open the door on its own; all you need do is position yourself near the front to avoid the fireballs.

Once in, you'll eventually come to another charming contraption: a tilted trampoline that makes a falling train of chromed balls very difficult to dodge. It's fun to watch, but blast it anyway—it's not a part of a puzzle—and continue right until you come to a pair of trapdoors. Stepping on the right-hand one opens the left-hand, releasing a swarm of bees. Shoot 'em and collect the gold.

This also lets you get down into their hole and take aim at the trigger unlocking the right-hand trapdoor. Step on it afterward, and you'll spill down a tube into an apparently exit-free room. Hitting the switch on the left wall—you can't reach the right one—starts filling the room with water. Great. You're going to drown.

Not so fast. Before you even hit the switch, investigate the little antechamber to the right and push the table there back into the switch room. Turn on the water, jump on the table, and float up to hit the switch on the right wall—this drains the room via the door at the right-end of the antechamber. Once the water level drops, head right, get the gold, and go up the ladder. (The water to the right is impassable at this stage.)

Lots of folks are getting stuck here—I suspect because this is not a one-step puzzle. First, push the table you'll find here down the shaft to the right. (Tables take a beating in this game.) Shoot the critter who's throwing barrels down the shaft—duck to prevent him from hitting you—and hop over the gap and push the big "Fragile" crate after the table. Now, hop back, descend the ladder, and blast the crate. The floating debris will give you something to walk on when you head right again.

Fall into the first pit you reach. ►

A—Wow! Exquisite. A must for your games library.
B—Great fun. Plenty of entertainment value here.
C—Meets expectations. Good, solid, performer.
D—Disappointing. Lots of room for improvement.
F—A real stinker. Don't waste your time.
*** You may encounter some problems under this operating system and/or require a PAL/NTSC adapter.**

Getting a 486SLC BridgeBoard?

Well don't get *SUCKED IN* to buying a slower, less compatible board.
Introducing Elite MicroComputers 486SLC 33MHz Bridgeboard, based on Commodores A2386SX. Just look below and see how we *BLOW* vortex away.

	EMC 486SLC	**Vortex 486SLC**
Speed	33 Mhz	25 Mhz
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Price per MB	$37	$65 !!!
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"*EQUAL*" Boards	***$930***	$1140!

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That's right! All the quality, and compatibility you need from Commodore. With all the performance you want from EMC. Need more features?
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EMC 486 SLC w/ 3mb	$930
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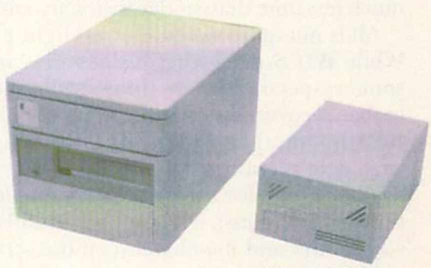
$75 off !!!! **$1520**

The Power Box

The PowerBox is an enclosure, specially designed for the A1200 power user. It has room for 2, 5.25", SCSI or IDE, half height devices, and includes a whopping 200 watt power supply. This power supply is usable by the A1200. So not only do you get all the power your drives need, but an extra 17 amps toward your A1200!

The Power Box $ 175

The Power Box



The BackPack

The BackPack

The BackPack is an enclosure, specially designed for the A1200, or BridgeBoard user who needs some more room for a drive. It holds 1 SCSI or IDE 3.5"x1" device, and has an internal 20 watt power supply.

The BackPack $ 110

2 to 3, IDE

2 to 3, IDE plugs into the mini IDE connector in your A1200. It then provides you with an external standard IDE connector, for easy expansion of 3.5" IDE harddrives. It does not interfere with your internal harddrive.

2 to 3, IDE $ 50

DEVELOPERS!! Ask about the A1200 Modular Expansion System

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Circle 179 on Reader Service card.

X, THEN Y, ELSE Z)—and the ability to point-and-click on a scrolling list of choices makes it feel all the easier.

Beyond that, Interplay has made some sensible moves here to broaden its field of fire. Map files appear fully compatible between platforms (BTCS is a 64-color port from the IBM version). Games created with BTCS run without benefit of the master program, so you can share your masterpiece with the world. Source files for any game can be reduced to ASCII for easy printing or viewing.

One cautionary note: The ease of use is deceptive, and creating a BTCS game is not a small project. That may be why, going on two years after the IBM version's release, there are still just two BTCS games up on the nets: Dragonport (which you can find in the Gamer's Forum on CompuServe) and Selene (in the IBM Forum on GEnie). I'm working on my own—Within the Walls of Astia Caron—and have gotten much farther along in much less time than under Visionary and Virtual Reality Studio.

All is not quite sweetness and light in Skara Brae, however. While BTCS does what it does well, it's also very limited in some respects. For one thing, while the quality of the graphics has recovered somewhat from the blight of Electronic Arts' BT III—Interplay did the first two Amiga Bard's Tales—there isn't nearly enough variety. Just four sets of wall "tiles" are available (one for the wilderness, one for the surface city, and two for dungeons), with only a handful of tiles for each and no way to mix and match between the sets.

Hence, every city you design looks more or less like a Sahara Desert ruin, and every section of countryside looks like every other section. At the very least, the program could use a separate tile set of special locations. (You can import your own DeluxePaint artwork and also create a custom title screen. But I'm a grade-school level artist at best, and I was counting on BTCS to provide the visuals.)

As much thought as must have gone into the specials editor, it could have been made even easier to use by incorporating full-screen scrolling text (rather than the two- or three-word lines it permits); macros; alphabetizing the many options to make them easier to find; or customizing the menus to allow repeated easy selection of the same command. The documentation here is especially skimpy; the program demands a little book, rather than this 42-page pamphlet. I had to sort out for myself what the local and global flags did, and I never did find how to insert a command within an existing special.

Finally, BTCS offers only the same old Bard's Tale, with all its limitations: square-by-square movement, no ground graphics in the out-of-doors regions, combat up the wazoo, basic character interaction, no option to divide up a party, and so on. I know this sounds a bit like yelling at the dog for drinking out of puddles and growling at visitors—in short, for just being a dog—but it's not 1986 any more. We're beginning to see RPGs with free-scrolling movement, like U.S. Gold's Legends of Valour (reviewed below) and Thalion's Ambermoon, and individually controlled characters, as in Psygnosis' Hired Gun and Domark's Shadowlands. And in that environment, Bard's Tale just doesn't cut it.

Don't get me wrong. I'm glad that Interplay has made the game engine accessible, and I think we'll all have some fun with this friendly system before it's finally played out. But BTCS shares the basic problem of every design system reduced to a commercial product: By the time it's old enough that new games under the system are no longer worthwhile, it's old enough that you're unlikely to be enchanted with the results.

Legends of Valour

B — 1.2/1.3 ✓* · 2.0 ✓ · 3.0 ✓ — Hard-drive installable. No on-disk copy-protection.

LEGENDS OF VALOUR (U.S. Gold import, about $45) goes down pretty smooth. It's the first free-scrolling, texture-mapped, role-playing game for the Amiga, and while it has a few obvious kinks, it's sure to give pleasure to those who've lusted hopelessly after similar IBM games like Ultima Underworld and Wolfenstein 3-D.

The movement isn't square-by-square, as has long been the custom in games from Bard's Tale to Black Crypt, but a continuous flow—similar to that in filled-polygon adventure games like Cybercon III—and the faster the Amiga, the smoother the flow. It feels less like being beholden to the limits of a game system, and more like moving through an actual place.

This particular place is the capacious town of Mitteldorf. It's enjoyably huge, both above and below ground—buildings often have second stories and, uh, expansive cellars—and that hugeness alone goes a long way. It'll take some time before you learn the lay of the land. There are tourist attractions (a zoo complete with pacing creatures) and hidden and difficult-to-reach places. There are jobs that will earn you a meager living—typically ferrying an item between the shops. There are guilds to join, quests to undertake, and spells to cast. Don't be too macho to ask directions: There are tons of folks to meet and greet walking by in 3-D, and certain intersections at certain times of the day are as busy as any small-town Main Street.

Initially, LOV may remind you of Alternate Reality in that the basic object is survival: filling your tummy, getting a good night's sleep, and avoiding the depredations of nasties. How-

Continued on p.82.

CRIB NOTES

From p. 76.

Jump over the barrel and the pit after it, and lay waste the critter playing with the levers that control the crane. (Don't stand in one spot, though, while doing so, or you'll quickly get nailed by the machine; move quickly right and left, getting in as many shots as possible at point-blank range before the crane reaches you. The operator will take a fair amount of damage before giving up the ghost.)

From here, you can go in two directions, and it doesn't seem to make a difference which you do first. The "up" ladder leads to the confrontation with the inevitable end-of-level guardian. He's headless, so be a pain in the neck instead—he's vulnerable there when he's about to swing at you—and be sure to collect the spiked ball and the gold caches from both right and left afterward. You shouldn't have much trouble avoiding a swinging ball that blocks the path on the far left.

Notice something odd here? Ostensibly, you've finished the level, killed off the Beast Jr. ...and yet, you don't seem to be done. There's no obvious exit, which you must create for yourself, using the crane and a certain barrel. It's a bit complicated and unforgiving, so take it nice and slow.

The barrel's located near the pit you jumped over just before you happened on the crane operator. Head back that way, push it to the edge of the shaft, and use the crane controls to move it to the right-hand side of the conveyor belt. (The top lever controls the claw, the middle moves it right and left, and the bottom moves it up and down.)

Take the "down" ladder and shoot the small door on the left wall to close it. (However, just leave the critter who's down here alone, and keep the right-hand door open. You want to get out, right?) Back upstairs, jump into the barrel, shoot the switch to the right, and quickly pull down on the joystick to close yourself in.

Then, wait it out. Once the barrel comes to a halt, jump out and head left. Shades of The Hobbit. You're out of Level Two and Fort Dourmoor, and we're out of space! Next time: the (really) tough parts. □

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From p.78.

ever, there's much more to do, and you'll eventually realize that there's something generally amiss in Mitteldorf, and a supreme quest to perform.

On the IBM, LOV was a latecomer and compared rather poorly to its competitors. On the Amiga, as the first of its species, it's a proper treat. The colors have enormous richness and vitality. You can look not only into the windows of build-



You must sharpen your role-playing skills to discover what is amiss in Legends of Valour's quaint town of Mitteldorf.

ings, but out of them, and even at a distance. If you're upstairs, that means a second-story view. (Shame there's no way to look up and down, though.)

However, many of the ideas in play here haven't been fully developed, and nothing else in the game is up to the level of the splendid freedom of movement. For instance, character interaction is by menu and painfully limited. Combat is likewise a set-piece affair and downright dull. It's easy to get arrested for not doing anything in particular, and the automapping system doesn't save your progress from dungeon visit to dungeon visit.

Moreover, LOV doesn't run ideally under all configurations—and under some (like 1.2) doesn't seem to run at all. Based on my testing, I can recommend the game only to those with a 1.3 ECS machine, a 16 MHz 3000 (the 25 MHz is rather too fast), or a 1200, and I'd recommend a hard disk as well, or at the very least a second floppy drive.

Legends of Valour is far from perfect. But its charm is undeniable.

SHORT TAKES By Peter Olafson

DUNE

A
1.2/1.3 ✓
2.0 ✓
3.0 ✓*
Hard-drive installable.
No on-disk copy-protection.

I played Dune (*Virgin*, $59.95) through to completion. I couldn't help myself. It dragged me in, it kept me occupied, and it didn't let me go until it was done. That's strange because, besides the sumptuous colors, supple animations, and a beguiling point-and-click interface, this struggle for control of Frank Herbert's desert planet—based on the David Lynch movie—is a rather simple little strategy-and-resource-management game.

As Paul Atreides, you seek out settlements, assign Dune's native Fremen population to mine space to keep the emperor happy, fight the neighboring Harkonnens, and, eventually, try to make this arid planet fertile. It's easily one of the most stylish games to emerge this year, but I occasionally wished Dune had more to it. It's quite linear, and the ecol- ►

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You'll have plenty to do in Dune to keep the Emperor happy.

ogy element seems to have been an afterthought.

And the performance is mildly flaky. I couldn't get it to install on hard disk under 1.2 or run from HD under 3.0, and it crashed spasmodically a number of times on the 3000. But, I could live with it. This is the spice of life.

MegaFortress: Operation SkyMaster

C+ — 1.2/1.3 ✓ 2.0 ✓ 3.0 ✓* — Hard-drive installable. No on-disk copy-protection.

Sniff. This second in the series of Megafortress data disks (*Three-Sixty*, $39.95) is likely to be the final Amiga offering from Three-Sixty. Like Operation Sledgehammer before it, SkyMaster consists of 20-plus new missions for this vived-up B-52 bomber—these set over North Korea (which is plotting an invasion of its southern neighbor) and the Philippines (which has been invaded by China).

Ah, those old Red devils just don't let up, do they? SkyMaster is generally as solid a creation as its predecessors and properly plugged in to the parent game's unique qualities. (It's a flight sim that isn't exactly a flight sim.) And the campaign to knock out a North Korean nuke project has a nice currentness.

But the Philippines campaign (drawn from Dale Brown's novel, *Skymasters*) just seems silly. They didn't have to go out on Brown's limb to find trouble spots; Yugoslavia would have been a much better setting. The cut-rate 21-page manual is woeful compared to Sledgehammer's. I suppose half a loaf is better than none, but I'm still hungry.

50 Great Games

D — 1.2/1.3 ✓ 2.0 ✓* 3.0 ✓* — Hard-drive installable. No on-disk copy-protection.

Well, that's stretching it a bit, innit? How about "10 Good Games, 15 Ordinary Ones, and 25 Fossils"? At $29.95, this three-disk compilation of public-domain-level software from England's Wicked Software (distributed by *Hollyware*) is a mere-pennies-per-game-m'boy bargain. But how many maze, Qix, and Othello variations can you play before you begin to act peevish with the pets and break the crockery?

Nice to see a handful of surprisingly fair-haired or just atypical games—the Boulderdash clone Take the Money and Run and the crude platform game Fun Factory, in particular—that haven't turned up before on these shores. And nice that someone resurrected the antique 3-D shooter Triclops Invasion.

But monotony and datedness—and an almost total absence of docs—do this one in. What it does best is fill the existential space between 4-Get-It and 688 Attack Sub on my shelf. Beware: Only 30 of the 50 are said to be 2.0 compatible.

Continued on p.88.

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- ☐ Drakkhen — Data East
- ☐ Defender of Crown — Cinemaware
- ☐ Dragon's Lair — ReadySoft
- ☐ Dungeon Master — Software Heaven
- ☐ Earl Weaver Baseball — Electronic Arts
- ☐ Emerald Mine — Constellation SW
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From p.84.

GEARWORKS

B+
1.2/1.3 ✓
2.0 ✓
3.0 ✓
Hard-drive installable.
No on-disk copy-protection.

Like a lot of puzzle games, Gearworks (*Hollyware*, $49.95) invokes the specter of Tetris in its promotional literature. Unlike most of them, it follows through on that promise without ripping off the original.

You mount gears of various sizes on pegs with a view to setting in motion all the stationary red gears strewn across the rectangular playfield. (The new gears are introduced one at a time, as in a certain falling-block game.) This is a sizing problem all by itself, and you also have to contend with an all-too-speedy game clock and wandering critters who rust gears and snap off pegs.

I wouldn't have minded a few more levels—there are about a dozen of them, each with multiple segments—and gradual introduction of features, but this game pushes the right buttons. It's definitely gear.

BREAK 'N' BASH

C+
1.2/1.3 ✓
2.0 ✓
3.0 ✓
Hard-drive installable.
No on-disk copy-protection.

Start-up game companies often start simple and modest and with something they know. So it is with *Texas' Knight Tyme Productions*. Break 'n' Bash ($29.95) is a two-player, 100-level game of Breakout—a sideways Arkanoid with a brain on the other side of the bricks.

There's nothing particularly dashing about that in and of itself. Digital Concepts once released a four-player Breakout clone called Lords of War—with simultaneous play by two human players—and it's a wonder that, with so many good PD and shareware Breakout clones (MegaBall, for instance), folks keep pumping these things out.

Here's the rub: It's the first Breakout I've seen that supports modem and null-modem play. No computer will ever play the angles as cleverly as another person, and if anything's going to make this old saw sing, that's it.

OXYD

A
1.2/1.3 ✓
2.0 ✓
3.0 ✓*
Hard-drive installable.
No on-disk copy-protection.

Here's the reason this column was late. Oxyd (*Dongleware*, $4 disk, $39 codebook) is an exquisite puzzle game of a sort we don't see very often. It not only nicely fills the gap left by games like Mindroll, Night Dawn, and Sliders, but it'll also make you forget 'em (if you haven't already).

In basic terms, it's an ambitious Concentration in which you roll a little black ball around a landscape knocking it against blocks and seeing what color circle turns up. Once you've matched up all the blocks in a level, you move to the next.

Color matching is but a tiny fraction of Oxyd's challenge. The real game is getting the ball to the blocks at all. You'll have to manage an inventory of useful objects and deal with quicksand, movable walls, lasers and bridges (and the buttons to turn 'em off and on), bombs, missing floor tiles, gravity-fed speed—all to charming graphic and sonic effects.

The end stays the same but the means keep changing on you—and always in some stylish, interesting way—and by the time I reached Level 9, I had no idea what to expect next... and couldn't wait to see it. That's a wonderful quality in a game.

UMS II: PLANET EDITOR

B
1.2/1.3 ✓
2.0 ✓
3.0 ✓
Hard-drive installable.
No on-disk copy-protection.

It's a shame that Planet Editor (*Intergalactic Development Inc.*, $49.95) wasn't available two years ago, when it might have appealed to more than the already converted. If you put Universal Military Simulator II aside when you discovered you couldn't grow your own worlds, now's the time to pick it up again. For when combined with the editor—at once astonishingly thorough and surprisingly easy to use—UMS II reveals its true colors as a real piece of work (albeit a desperately slow one on unaccelerated machines). I had the sense while moving through its menus and windows that there wasn't anything I couldn't do, and that's what a game editor should be.

ESPANA: THE GAMES '92

F
1.2/1.3 ✓
2.0 ✓*
3.0 ✓*
Not hard-drive installable.
No on-disk copy-protection.

I can't imagine anyone giving a hoot about The Games '92 (*Ocean*, $39.95) at this late date. If you're going to do an Olympics game with a sizable database of maps and background, put it out in some semblance of proximity to the Olympics when we're still in rah-rah mode—not the following February when we're thinking about baseball.

The events themselves are plentiful—I count 29—but it takes way too long to wend your way through the game system to get to 'em. And when you get there, you're not rewarded with glossy, high-end stuff, as in ReadySoft's International Sports Challenge, but crude, done-in-my-Mom's-basement samples and drab graphics. Everything looks coated with dust, and when you realize that this one has been sitting around since last summer, that kind of makes sense. Disqualified. ■

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By Tim Walsh

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Michael Darr
Johnston, IA

A. The A1200 shares roughly the same potential for video port capabilities as the A4000. With a confusing array of monitor choices for AGA machines, required reading includes "On Display" (June '93, p. 24), by Sheldon Leemon. With Commodore's Quad Sync 1942 ($699) on the way, and CBM planning to discontinue the 1960, expect to see price reductions that could make the 1960 the monitor of choice for new A1200 users. The 1960 lacks speakers, so run two RCA cables from the A1200 to a low-cost boom box with left and right AUX input jacks, or use an old receiver and speakers.

To CD or Not CD

Q. *Could you please list the CD software that's compatible with the A570 CD-ROM drive for the A500? Am I limited to the list of CDTV titles, or can I select software from the lengthy list of PC and Mac titles? Also, can the A570 work with DKB Software's MegAChip 2000/500?*

Chris Shepard
APO AE

A. CD-ROM technology can puzzle even many experienced computer users. Problems typically occur from confusing CD-ROM file-format compatibility with software compatibility, which are two separate issues. Both CDTV and the A570 share the industry-standard ISO-9660 CD-ROM format. Any CD-ROM that conforms to that standard can be read by either CDTV or the A570. Audio CDs, CD+G, and CD+MIDI formats can also be used in the A570.

The A570 can read font, graphic, sound, and text files from Mac- and PC-specific CD-ROMs. Even though the A570 adds 2MB of fast RAM, you'll probably need more, and some interplatform conversion utilities—most of which are available in the public domain—to tweak those non-Amiga files into Amiga-friendly form. As a rule of thumb, you can't run PC or Mac software on the Amiga without installing some form of software or hardware emulation.

Finally, consider DBK Software's MegAChip 2000/500 for an A570. It gives access to 2MB of chip RAM, which is needed for large graphic files and display screens.

Driving Those High-Density Roads

Q. *Following the recent upgrade to the 2.1 operating system on my A2000, I decided to install an A4000 high-density drive. My dealer explained that 2.1 supports this drive, however, I've been unable to find any commands to format disks in high-density mode. Is this drive capable of reading 1.44 MS-DOS disks using my PC emulator?*

John A. Scotto
Watertown, NY

A. First make sure that you are using high-density disks. Your Amiga can't place a high-density format on a double (low) density disk. If you don't have a GEnie account, find someone who does and get DRV144.LZH (file number 17920).

Within DRV144.LZH is Gcrdisk.device, which is needed in place of the standard Trackdisk.device; it also contains a mountlist to get the OS to recognize an external high-density drive. You can also modify the mountlist to use with an internal drive. To do this change the default df2: mountlist references to either df1: or df0: (depending on whether your high-density drive uses df1 or df0 internal connections), and likewise change unit numbers from 2 to 1 or 0, and then resave the file. Version 2.1 of the Amiga OS should then be able to detect high-density disks in that drive. Use Consultron's CrossDOS or a similar PC utility to read, write, and format both double- and high-density MS-DOS disks.

Programming Demands

Q. *I'd like to write a program to generate random numbers, display a chart and present screen prompts. One problem: I haven't written any programs on my Amiga. What's a good Amiga programming language? I learned BASIC years ago.*

Ed Ouellette
Norman, OK

A. Since you already know BASIC, you're probably aware your programming order isn't too tall. To accomplish it, though, I'm a little hesitant to recommend the Amiga Basic that accompanies older Amigas. If you have a newer Amiga, or are just looking for a more comprehensive package, check out AMOS ($110) from Europress Software, which is one of the most complete BASIC packages available for the Amiga. If you want to really expand your programming horizons, don't overlook the programming language called C.

To get started with C, try a beginner's course at a local community college, university or technical school. Before you begin the course, get a copy of SAS/C 6.0 for your Amiga from SAS Institute ($399). You can replicate most of what you learn in a class on your Amiga with SAS's package, since it uses true ANSI commands that are transportable to and from the Unix-based computers used by many schools. Best of all, you'll pick up marketable programming skills in the process. ■

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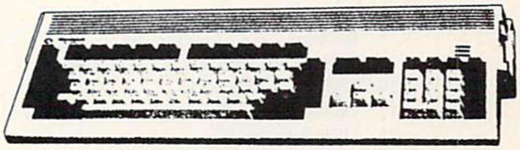
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- Modern structured format allows you to combine smaller program sections into larger, sophisticated programs
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New Disks

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VO10: Imagine Enhancer- ICoons and ISL supplement the object and scene editors.
FD88: AmyBoulderdash - a clone of the original classic.. extremely well done complete with level editor, 2 complete sets of levels and a level editor. Requires Workbench 2+.
FD87: OXYD- A commercial quality game--similar to Marble Madness in nany ways, but allows two computers to link & play together...see how many of the 200 landscapes you can complete...so challenging a hint book is available for this game!
FD86: UChess: The strongest playing Chess program available for the Amiga period. Req. 68030+, Workbench2+, 4MB RAM. Supports AGA.
WB129: Super Virus Killer - From Safe Hex Int'l, who catalogs and kills Amiga Viruses *worldwide*--a complete virus system that knows all Amiga viruses...updated often. Req. WB 2+
WB128: ColorFonts - contains 12 color bitmap fonts for use with DPaint or any software that supports ColorFonts. Perfect for titling
WB127: Blankers - Over 20 different screen blankers. Most run on Workbench 1.3+...a few require 2.0+
WB126: EdPlayer - music MOD player that looks, acts and plays like your CD player...AmigaWorld's #1 MOD utility. Plus MOD songs.
DD92: Developer Contains the official Commodore developers kits for the AmigaGuide and Commodore Install Utilities...a must have for all serious developers.
DD91: ParBench - Allows you to easily connect/network two Amigas/CDTVs together and share storage devices. Req's WB2+ and custom cable (docs to make cable included--easy).
DD90: Advanced Utilities - CompressDisk doubles the capacity of your hard-drive on the fly with compression!!! Also contains: disk optimizer, SCSI mount utility, Keymap editors, Enforcer, Undeleter & more. Most programs require 2.0+.

Fun Disks

FD6: GAMES! - This disk is chock full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.
FD7: Pacman - This disk contains several pacman type games including; PacMan87, MazeMan and Zonix.
FD10: HackLite - A dungeon adventure game. Considered a must-have classic. This is the 2nd release of this game. Great graphic interface. Play time several weeks!
FD11: Las Vegas and Card Games - Las Vegas Craps - The best Las Vegas Craps simulation every written for any computer. Contains extensive HELP features, Also Thirty-One,VideoPoker and more.
FD12A,FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great gameplay. Counts as 2 disks. Req. 1Mb and two drives (or hd).
FD13: Board Games - contains Monopoly, Dominoes, Paranoids, and others.
FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arkanoid/breakout type game, Trix - a Qix type clone.

DD83: IBM - Not one, but *TWO* IBM emulators that will allow the running of MS-DOS software *with* Amiga programs!!! Comes complete with programs to turn your Amiga floppy drives into 720K IBM compatible drives.

FD17: Educational Games - This disk includes several games for youngsters including geography, math, science, and word games, also includes Wheel of Fortune.
FD20: Tactical Games - MechForce; A game that simulates combat between two or more giant robots. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.
FD27: Arcade Games - This disk is loaded with some great games. Includes, Raceorama a great racing car game with ten different courses, MiniBlast a helicopter gunship type clone, Shark in the same class as frogger, and SBreakout the original breakout with more.
FD31: Games! - Air Traffic Control - a good ATC simulation, Black Jack Lab - a full featured set of card games, ChessTel - play chess with your friend in distant and remote places with this game and a modem, labyrinth - a well done text adventure game (like an infocom game), and MouseTrap - a 3d maze game.
FD32: Flight Simulator - An instrument flight simulator for a DC10.
FD33: Arcade Games - Ffreddy a Mario Brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and Wetroids a wonderful version of asteroids with a hilarious twist.
FD35: Omega (v 1.3) - An outstanding dungeon and outdoors adventure game in a similar vein as hack, rouge, and moria. This version is considerably faster and better that all previous versions. Play time: weeks.
FD38: Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.

WB105AB: Workbench 2+ Extras #2
This set contains the programs that should have been included with WB2+. These powerful utilities take full advantage of the many new capabilities that are available in Workbench 2+. Includes: Tool Manager - a wonderful utility to add programs to your TOOL menu, Virus Protection - Degrader, Icon - Enhances Workbench's "Show All" to display over 40 distinct icons for different types of files. Bitmap Font Editor, Screen Blankers - ala fractals and spliners and swarming bees! Requester Enhancers and CPUBlit. Two disk set, counts as two.

FD39A&B: Star Trek, The New Generation - This is a completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Excellent!!! Counts as two disks. Requires 512k
FD50: Submarine Game - Sealance, one and a half years in the making, this is an outstanding submarine tactical game. Commercial quality, highly recommended.
FD57: Arcade Games - Includes 2 truly commercial quality games. MegaBall, an Arkanoid-ish game, features 5 musical scores and addicting gameplay. Gravity Attack is a psychadelic trip through several different worlds—each different.
FD59: Game Potpourri - Xenon III is an almost exact clone of the commercial game of the same name..a great shootemup. Crossword will take lists of words & automatically generate word-search puzzles for any Epson compatible printer.
FD60: Games - In Nebula, race over a 3d world to destroy enemy installations. Interferon; a *great* Dr. Mario clone. Enigma; is it a game or puzzle?
FD61: Games - Solitaire; great graphics, plays two versions. Klide; an interesting piece of eye candy. Extreme Violence; 2 player kill or be killed game. YATC; A Tetris clone with Artifical Intelligence. Genesis; create realistic 3d fractal worlds.
FD62: PomPom Gunner. An extremely smooth and well done World War II gunner simulation. Requires 1 megabyte of memory.
FD64: Games - Wizzy's Quest - a "great" 50 level game with great graphics, Cubus - a 3-dimensional Tetris type game (rotate and move in 3 dimensions). Husker Du - Colors and pattern rather than shape in this Tetris-esque game; 5 screens and 3 levels of difficulty. Requires Fat Agnus (1 Meg of Chip)
FD67: Arcade - Includes Llamatron a well-done "Robotron" clone. Hate is a "terrific" Zaxxon clone with multiple levels/worlds and smooth diagonal scrolling...a 10!
FD69: MindGames - Had enough of shoot-em up games? Relax and let these 21 games exercise your mind instead of your wrist.
FD73: Arcade Series - Intruder Alert! is a MULTI-level "Berserk" clone. Features smooth gameplay, great graphics & digitized sound f/x.
FD74: Arcade Series - RingWar is an "Outer Limits" clone with vectorized graphics. MotherLode is a "Lode Runner" clone with 50 levels! In BlitzTanks, they're coming at you from all directions!! Call in air strikes and use your heavy artillery to survive!
FD75: Arcade Series - Descender is a clone of the classic arcade game "Tempest"; complete with vectorized graphics. Tanx is the classic battle of trajectories and inertia between two tanks—incredibly well done! Search is a maze game unlike any other—included is a level editor too. (Tanx requires 1 meg chip memory=Fat Agnus)
FD77: Arcade Series - Galaga'92 is a clone of the arcade game with several gameplay enhancements--with smooooth, sharp graphics, it's better than the original! Pharaohs Curse is a clone of the original C64 classic. Diplomacy is a beautifully computerized version of the Avalon Hill board game--conquer or be conquered!

The AmigaWorld "Best-Of" Set!
FD85ABCD: AmigaWorld's Best - These four disks contain the *hottest* p/d games of '92! Includes Mother Lode, Moria, Minefield, Poing, Intruder Alert, Deluxe PacMan, Rocky and Super Artillery (see Dec. '92 AmigaWorld) Four disk set, counts as three.

FD81: SuperGames - Some of *the* best games--Donkey Kong is better than the original *with an extra level*! Frantic Freddie and TrailBlazer are both fast-paced arcade games. Mad Bomber is the classic game of "Kaboom" redone with an Amiga flare. All of these games are excellent!
FD82: Intrepid - In the Arctic ice, you control a tank on a mission to rescue hostages in this superbly crafted Amiga original.
FD84: Games! Deluxe PacMan is better than the original--20+ mazes, special "power-ups" with *oustanding* graphics. ThinkAmania is the classic game of concentration--with *beautifully* drawn HiRes images.

Workbench Disks

WB4:Telecommunication - This disk contains several excellent pd communication programs: Access 1.42, Comm 1.34 & Handshake 2.12a. See also WB102 & WB115.
WB5: Fonts #1- Several fonts (35) for the Amiga, also included are five PageStream fonts,and ShowFont - a font display program.
WB6: Fonts #2 - ShowFont allows you to quickly and painlessly view all 256 characters in a typical font. Includes large AmigaDos system fonts (many up to 56pts).
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.
WB9: Icons - Truly a multitude of various types and kinds. Also includes IconMiester, IconLab, and others great utilities to help generate icons.
WB10: Virus Killers - The best: VirusX(4.0), Kv(2.1), and ZeroVirus III.
WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts of file manipulation. A must have!
WB13AB: Printer Drivers and Generator - over 70 different drivers (including HP LaserJet 3 & 4!), also includes a printer-driver generator. Two disk set counts as two.
WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB22: Fonts #3 - Several more great fonts. These, like the other font disks work great with Dpaint and WYSIWYG word processors.
WB23: Graphics and Plotting - Plot, a 3-D mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map IFF image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere.
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB29: Graphics and Sound - This disk has several different Mandelbrot type programs producing stunning graphics. Includes, MandelMountains - a realistic terrain generator, Fracgen - generate recursive fractals from user input, Mandelbrot and Tmandel - two fast mandelbrot generators, also Mostra - the best IFF display program to date. Sound - a great IFF sound player, will play anything.
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB35: 3D Graphics - This disk contains 3Fonts - Full vector font set for use with 3d programs, FontMaker - make 3d fonts from any system font. Make3DShape - create 3d shapes from any image, DumptoIFF - create 3d animations preserves pallet, World3d - a demo of a front end for use with DKBRender.
WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbench, and RayShade - a very good raytracing program, create your own beautiful 3d graphic models with this one!
WB37: Educational - Educational games and puzzles that cover math, geography, spelling, and books. Ages 6 - 15
WB38: Plotting and Graphics - Plotxy is a powerful full featured plotting package. Used by many colleges and universities. Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.
WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful easy to use program. Version 3.20--compatible with WB2+.
WB43: Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package. Req. 1.2 MB

Special Product!
QT1: The A64 Package - A very complete Commodore 64 emulator. Supports any CPU and is fully compatible with WB1.3 & 2.0. This version includes a special adaptor that will allow you to connect your 64's 1541 disk drive to your parallel port of your Amiga for total emulation. Two disk set, counts as two. Special price $49.95 - including hardware.

WB46: Clip Art - HighRes clip art with the following motifs - embellishments (borders, dodads ,...), people, & transportation.
WB47: Clip Art - Hires clip art. Motifs - hair, drafting, summer, animals and macfood.
WB48: Clip Art - Hires clip art. Motifs - Holidays, music, medical, and misc.
WB50: Animation - Seven of the best euro-style animations or "Demos", including - scientific 451, subway, sunride, thrstdemo, tnight, waves, and woow.
WB53: Graphics - Raytracing programs generate absolutely stunning realistic looking planes, rockets, buildings..., and surreal images. C-Light is the most powerful EASY-TO-USE of it's kind we have seen to date. This is easily better, and more full featured, than similar commercial programs costing in the hundreds of dollars. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...
WB54: Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and more.
WB55: Application - XCopyIII -.a full featured disk copier, make backups of copy protected disks. RoadRoute - find the quickest route from one city to another, highway description included. Diary - a diary program like "Dougy Houser M.D", Cal - a calendar program, Magman - a database tailored for articles and publications.
WB57: Animation - This disk has several "Demo" style animations, Including, Blitter, Lolly, Sun5, vertigo, vortex, and xenomorph.
WB62: Midi Utilities - Several useful midi utilities including, programs to transfer to and from several music programs to midi, a midi sysex handler, a midi recorder with timebase, display midi info, file sequence player, and a few scores.
WB63: Disk Utilities #3 - Several highly recommended programs to aid in removing duplicate files from your hard drive, performing file backups, Binary editing, fast formatting, file recovery, disk track recovery, and forced disk validation of corrupt disks.
WB66: Icons #2- Lot's of neat icons. Also, several wonderful programs that to let you create your own icons, modify and manipulate icons and info structures.
WB69: Music - 90 minutes of classical and modern electronic music for you Amiga.
WB75: Music - over 100 instruments files (.inst) and sample sound files (.ss)
WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going. LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - find out what time it is in up to 50 global cities.

WB119ABCDE: Font Set This collection contains over 100 typefaces for use with Professional Page/PageSetter 3+ or PageStream 2.1+. These fonts will output to any laser printer or dot-matrix printer with no jaggies, thanks to outline fonts. Very pro-looking. *5 disk set, counts as 4.*

WB81: Great Applications - DataEasy a very easy to use, database program. Don't let the ease of use fool you, this is a very full featured database program including full printer control for address labels and mail merge applications. Also includes, TypeTut a good typing tutor, RLC a full featured label printer, Banner, a multi-font banner maker, and Budget a home accounting in a program. Highly recommended.
WB82: Animations - Four full length, well done "movie" style animations. Including, Coyote, JugglerII, GhostPool, & Mechanix. 2 disks, counts as 1.
WB93: Workbench 1.3 Extras #2 Contains the utilities that Commodore should have shipped with the Amiga; VirusX4.0, Snap, FixDisk (recover corrupt/deleted files), Disk Optimizer (floppy & hard), MachIII (screen blanker, hotkey, mouse accel., macro, clock utility), GOMF (a gurubuster)and PrintStudio.
WB95: Checkbook Accountant 2.1 - Definitely commercial grade; we've seen many checkbook programs and this is the best. Full budgeting, transaction recording & report generation.
WB96: Dupers - Contains XcopyIII & Nib which will backup copy-protected programs. FreeCopy removes copy protection from several programs, and SuperDuper will crank-out fast AmigaDOS copies.
WB99: Lifestyles - Includes AGene—family tree program that tracks up to 600 people/marriages/etc. Landscape is a CAD program to create gardens/landscapes. Loom simulates an 8 harness loom; experiment with pattern design with instant feedback.

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WB102: Telecommunications - Contains the programs NComm 2.0 and VT100-29B. Zmodem protocols, XPR protocol support, full VT100 emulation. NComm's script language is so powerful it can create a full-featured BBS system.
WB106: Home Manager - This is a great all-in-one address book with an autodialer/notepad/to-do list/appointment scheduler/home inventory database and phone number dialer.
WB108: OctaMED - This breakthrough program doubles your Amiga's sound capabilities from 4 channels to an ear-popping 8 channels! All the renound editing capabilities of MED plus 4 more channels! If you thought your Amiga sounded good before...you aint heard nuthin' yet!
WB109: VerseWise - Display, search and print The New Testament.
WB113: Sid II - Why pay 40 bucks for a directory utility, when this one will do it all plus much more! A truly professional-caliber program. Sid 1 was our best, now *completely* rewritten, Sid 2 will astound you.
WB114: Fonts #4 - Contains 36 bitmap system fonts.
WB115: Telecommunication - If you have AmigaDOS 2.04+ and a modem, then this is *THE* program for you. Term *totally* conforms to the User Interface Style Guide for 2.04, has an ARexx port, and supports all popular file-transfer protocols through XPR libraries. We wish all programs were this good.
WB116: Databases - This is what you've been waiting for! Contains 5 uniquely specialized database programs for tracking: Videotapes, CD's, Magazine Articles, Comic Books and Trading Cards!
WB120: Grinder - a complete graphics conversion package that supports GIF's, JPeg, Neochrome, Degas, PCX, Targa, TIFF, HAM-E and IFF format pictures. An invaluable tool for all desktop-videographers and desktop publishers.

WB118: Amiga Beginner - *You asked for it!* A complete tutorial for the beginner on using the Amiga. Starts you off at the power-switch and takes you through to the CLI/Shell and all points in between. *Bonus!* Also included are 16-color icons to replace *every* icon in your 2.0+ Workbench.

WB121: ProPage3 Enhancer - This disk contains over 40 "Genies" for use with ProPage 3.0, including useful ones like Make Pie Chart and Resize Text to fit Box to name a few. Also includes structured & bitmap clipart for unique borders...a *must have* for all PPage 3 users.
WB122: System Optimizer - KCommodity enhances your system, gives memory meters, mouse/keyboard enhancements, online timers plus *many* others...too numerous to list! REorg will optimize hard and floppy-disks for a big speed increase. HDMem will allow you to use up to 2 megs of hard-drive space for virtual memory! (Req. 68020+ w/MMU) All programs require 2.0+.
WB123AB: Flags of the World - same as WB124, but for Workbench 1.3. Req. 1MB. 2 disk set, counts as two.
WB124: Flags of the World - Two modes: click and learn or a game to test your knowledge. Great graphics--fantastic learning tool. Has current Russia & Yugoslavia republics. Req. Workbench 2.0+ & 1MB RAM.

Dev Disks

DD54: Compression - This disk is loaded with all of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc, Lharc, Lhwarp, Pkax, PowerPacker a must have by all, Zip, Warp, and Zoo.
DD71AB: C Compiler - This disk contains DICE, Matthew Dillon's full featured, powerful C compiler & environment. 2 disks, counts as 2.
DD86: The Programmer - Includes GadTools and REQTools which will allow you to create your user interfaces and then the program will automatically generate "C" source code or Assembly-code. Requires, and writes code for, AmigaDOS2+.
DD89: UEdit - Probably *the* most powerful text editor ever written for the Amiga. Previously commercial, now public domain. Req. 1 MB.

Video Disks

VO5: Modeling - This demo, Vertex, allows you to create 3-D objects without using the abstract X, Y and Z views. Loads Sculpt-3D/4D, Turbo Silver, Imagine, LightWave, GEO and Wavefront formats. MagicTween will metamorphasize any two pics and animate the "in-between" frames.
VO6: 3D Objects - Contains 20 objects all in Imagine format. Includes a complete Amiga 3000, space station and much more!
VO8: CompuGraphic Fonts- Contains 2 Clipart-style fonts and 4 actual typefaces for use with WB2+ and its Fountain utility. Great for Desktop publishing or titling.

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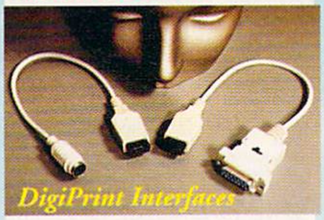
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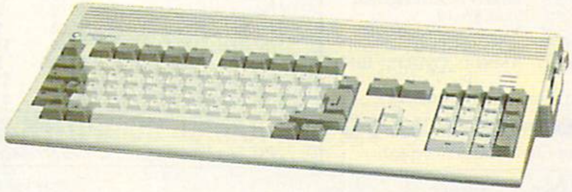
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Commodore A1200 $559

The Amiga 1200 boasts a full 32-bit architecture, 68020 processor, Workbench 3.0, the new AGA graphics chip set, 2MB Chip RAM, and an internal IDE hard drive controller.

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Featured Products

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M1230XA -- 50MHz 030 and up to 128MB RAM -- $Call!

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GVP has just updated this exciting product with new software, and a lower price! Features 24-bit graphics, genlock, framegrabber, 2-input switcher, **Caligari-24, MacroPaint** and much more!

Briwall Price -- $1259

July Highlights

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Koss Amplified Mini Speakers	$59
Playmation	$359
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THE LAST WORD

Kudos, complaints, comments, concerns, and contributions from our readers.

Double Standard

I run a BBS for Amiga and IBM computer users. All users can download commercial software demos for free from my system. This is a free service to all Amiga and IBM software developers. Out of the 172 letters that I sent to Amiga developers, only four companies responded with software demos. I have never had any problem getting software for the IBM users. It is not fair to the Amiga users. I even had one Amiga company tell me that it would be glad to send me a demo if I sent $10. I asked this company's representative if he ever got charged for looking at a stereo or a new car and he hung up on me.

Ron Wells
International Data Exchange

Fish Lovers Unite!

I recently found out that Fred Fish might stop making his Fish disks because of lack of subscribers. All of us have, or at least have access to, this library, but how many of us received it from the big man himself? This man has done a lot for all of us; not many libraries have more than 800 disks with the latest versions of PD and shareware. We all need to pool our resources and show this man how much he means to us. A collection or something, even a letter to let him know we care, might help. One thing's for sure, it's our fault that this is happening and we need to do something.

Jeffrey F. Fink
Normal, IL

RSVP With CPU

Now that Intel has come out with its new Pentium CPU chip, said to be many times faster than Motorola's 68040, are we in for another long dry spell far behind the competition? Commodore was smart enough to design the A4000 with a plug-in socket for any new CPUs produced by Motorola, so they can be inserted without re-engineering the whole thing. But when will Motorola release its new 68050 or whatever can compare with Intel's Pentium?

Henry Williams
Cincinnati, OH

Font Guide Addenda

I read with interest Jeff James' article on fonts ("The ABCs of Amiga Fonts," April '93, p.51). However, he was wrong when he said that Mac PostScript fonts are not compatible with Amiga programs that use PostScript. Not knowing any better, I bought a collection of 120 PS Type 1 typefaces from Casady & Greene. Not all of the fonts came with the AFM files that Gold Disk's FontManager needs for conversion but, no problem, I loaded those into Altsys's Fontographer and regenerated the AFM files. Mac PS printer fonts are located on the resource fork of the file in MacBinary, while the AFM files are in ASCII on the data fork of their file. ReadySoft's AMax II includes a very good utility that will send these into Amiga format with no problem. Altsys's Metamorphosis Pro will convert IBM PostScript and TrueType fonts into Mac format (and vice versa), and Type 3 fonts into Type 1, which is compatible with the Amiga. All the Amiga user needs to use Mac fonts is a Mac-to-Amiga conversion program.

> *I asked this company's representative if he ever got charged for looking at a stereo or a new car and he hung up on me.*

Dave Jackson
Weatherford College

TV Tie-In

To many Amiga enthusiasts, Commodore's advertising (or lack of it) is extremely frustrating. Certainly, independent magazines, like yours, do what they can. I think you could get more people to at least pick up your magazine at the newsstand and hopefully buy it if you made some mention of the Amiga's use in TV production. Most of my friends are not interested in image processing or video effects, but mention the fact that shows like *Deep Space 9* are using the Amiga extensively, and all of a sudden they start asking questions.

Paul Cimino
Gulph Mills, PA

AGA Deadlock

By fielding AGA without retargeting capability, CBM has excluded the majority of its customers from the mainstream without an upgrade path. So who would purchase an AGA video card? Probably most owners of A3000s and accelerated A2000s (not to mention a good number of those adventurous owners of accelerated A500s). If the majority of the installed consumer base could access AGA with retargetable software and a video card, there would also be little risk to software developers. Some of the PC-only developers might even consider a three million plus, and growing, market worthy of consideration.

John C. Comerford
Woodland Hills, CA

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k. ☐ Undecided

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m. ☐ No
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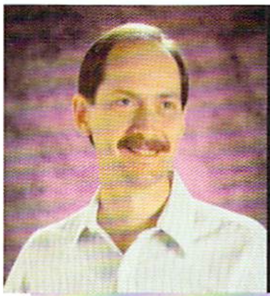
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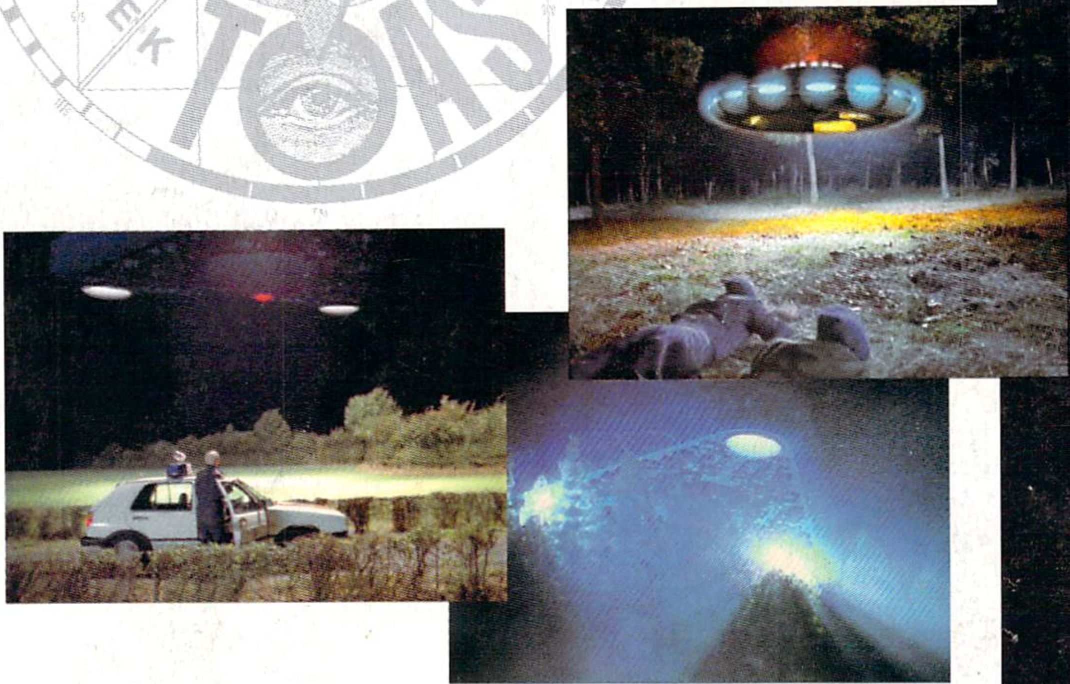
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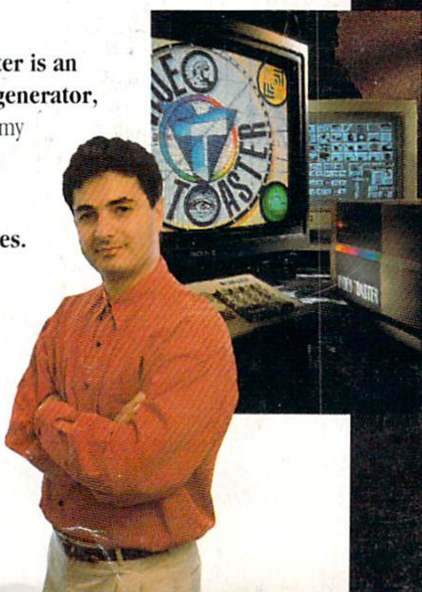
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